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Erasmus School of Economics

Master Thesis Economics of Markets and Organisations

Relying on government treaties in the fight against climate change: an analysis of the relation between treaties and political trust and the preferred type of treaty under uncertainty

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Abstract

In this thesis three main things are done to answer the question: *What treaties are efficient given climate related uncertainties and how do treaties affect political trust*? In the first part, it is explained how treaties work and how they can generate trust. Citizens in the Netherlands can evoke rights from treaties. National law, international law, European Union law and the principals of good governance provide assurance that the government acts a certain way. Secondly, data from the OECD (2021) was used and by manually counting lists of treaties from the Council of Europe (2021) the dataset in this research is made. There appears to be a positive correlation between the number of treaties a country is involved in and the level of political trust in that country. The last part of this thesis contains a model which is used to analyse which types of treaties are efficient. This is done in the light of climate change related uncertainties. In this model countries can choose one of two types of treaties. They can agree how much instruments to invest such that the costs are a set amount. The alternative is to agree on the amount of emission reductions, which can result in different costs dependent on the efficiency of the instrument. From the model follows that countries prefer to form treaties based on a fixed amount of costs. The alternative of ensuring a certain level of reductions by taking a risk with regards to costs is never preferred in this model, even though it might be better for the level of political trust in that country.

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Introduction

Trusting the government to uphold certain rules and act in a way that has been promised is important. Many choices people make are based on these rules and promises. Subsidies on solar panels, tax advantages for driving an electric car or even subsidies on purchasing a wood gasifier all incentivize people to buy such items. Therefore, citizens must be able to trust the government to uphold their promises. Of course, there are many laws and rules that enforce the government to act a certain way. It gives reassurance to citizens that the circumstances under which they make a decision do not suddenly change. Similarly, treaties amongst countries are formed to provide certainty on multiple subjects such as taxes, diplomas and human rights. Treaties can extend rights abroad, as they can ensure that the agreements made in them are applied in all countries that signed the treaty.

Treaties regarding climate change are becoming more important. Countries make agreements to reduce emissions, as climate change is a global problem. For example, the Paris Agreement has been signed by many countries in an effort to keep global warming below 2 ℃ (United Nations Framework Convention on Climate Change, 2021). Such agreements can be difficult though, due to the uncertain nature of predicting the course of climate change and the effectiveness of climate policies (Gillingham, Nordhaus, Anthoff, Blanford, Bosetti, Christensen, McJeon, Reilly & Sztorc, 2015). Nevertheless, many citizens want their government to take actions and uphold their promises with regards to reducing emissions.

In the Netherlands citizens can derive rights from international treaties. Moreover, national laws are not applicable if they are not in accordance with international agreements from treaties (Art. 93 & 94 of the Dutch constitution).[1] Important is the distinction between international law and European Union law. Articles 93 and 94 of the Dutch constitution are applicable to international law, European Union law is directly applicable because the European Union has an autonomous character[2]. When a country signs a treaty, citizens can expect certain actions that match the content of that treaty. If these actions are enforceable, then this would suggest that treaties create more trust in the government.

In the remainder of this thesis, when referred to 'trust' often 'political trust' can be read instead. Multiple opinions about the definition of political trust exist, but in this paper the definition by Hetherington (2005) is used. Political trust is the degree to which citizens

[1] This will be discussed more extensively in section ''*International law, European Union law and national law*'.
[2] See footnote 1.

believe that the government produces outcomes that are consistent with their expectations. So, in case of climate treaties, political trust would be high if citizens belief that the government will enforce the agreements made in such treaties.

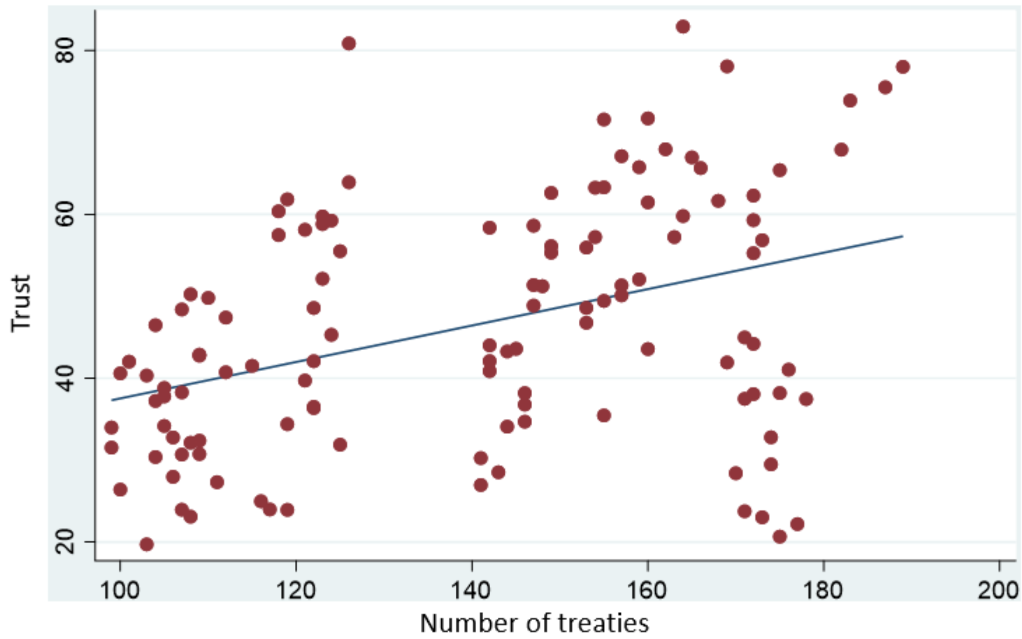

Figure 1. Relation between trust and the number of treaties of 25 countries that are members of the council of Europe for the years 2016-2020[3]

In Figure 1 correlational evidence shows a positive relation between trust and the number of treaties a country is involved in. On the x-axis the number of treaties and on the y-axis political trust is shown. In this figure trust is defined as the share of people that has confidence in their national government. As can be seen in the figure, there is a large spread of the level of trust amongst countries. This is most likely due to the fact that political trust is influenced by many factors. For example GDP, the types of leaders a country has, or other shocks like the recent COVID-pandemic can all influence trust levels[4]. Data on trust is obtained from OECD (2021) and data on the number of treaties is obtained by combining various charts of signatures and ratifications from Council of Europe (2021).

[3] More details on the data will follow in the section: 'Data'

[4] Excluding 2020 from Figure 1, as in this year the pandemic started, does not change the figure much. A figure excluding 2020 can be found in Appendix A. Moreover, for each individual year there is a positive correlation between the number of treaties and political trust. Switzerland and Greece have been omitted from Figure 1 as they are outliers, a figure including these countries also shows a positive correlation and is found in Appendix A.

In this research there will be a small data analysis using the above mentioned data. The research question is: *What treaties are efficient given climate related uncertainties and how do treaties affect political trust*? Literature and data will be used to investigate this. Also, a model will be introduced to analyse which treaties countries form given the uncertainties that involve climate change.

The results show a positive correlation between the number of treaties a country is involved in and the level of political trust in a country. From the model follows that countries prefer treaties that imply them to have fixed costs. Countries had a choice of two types of treaties. They can either agree on a fixed level of instruments to invest, which implies fixed costs, or they could agree on a certain amount of emission reductions. In the model, the total emission reductions are dependent on the efficiency of the instruments. Therefore, agreeing on a certain amount of emission reductions could turn out to be relatively costly. On the other hand, agreeing on a fixed amount of instruments can result in relatively low reductions if the instrument is ineffective. In other words, the model shows that countries rather risk obtaining low emission reductions than risking high costs.

This research is important, as to the best of my knowledge, the relation between political trust and treaties in this setting has not been studied before. This research would thus contribute to the theory on political trust by specifically looking at the effect of treaties. Moreover, sometimes agreements between countries are not upheld. This begs the question whether or not citizens can rely on treaties and if so, to what extent. This is especially interesting regarding climate change, as due to the uncertain nature of this topic, governments cannot always fully control the outcome of their efforts. Thus, investigating what type of treaty countries prefer given the uncertainties regarding climate change is of importance. The consequences of climate change affect people worldwide. Learning more about how these uncertainties can effect agreements between countries could potentially help improve how future agreements are made.

Moreover, political trust has many effects on society. For example, Marien and Hooghe (2011) have empirically found by looking at 33 European countries that higher levels of trust increases levels of law compliance. Also, Trüdinger and Steckermeier (2017) used data from Germany to show that political trust increased the acceptance of a certain surveillance-policy whereas only providing more information did not. Furthermore, voter turnouts are higher when trust in parliament is higher (Grönlund & Setälä, 2007). Thus, by better understanding how political trust is formed, it may help explain other phenomena.

Institutional framework

Many factors determine political trust. Dincer and Uslaner (2010) found a positive relationship between trust amongst people in general and GDP-growth. Though general trust is not the same as political trust, it is likely connected. Namely, Dincer and Uslaner (2010) stated that general trust reduces the likelihood of people corrupting government institutions. Logically, less corruption in government institutions would improve the trustworthiness of these institutions. McLaren (2016) has studied how beliefs of individuals regarding immigrant policies and the immigrant policies of their governments affects trust in the political system. She found trust to be higher when there is consensus between the government's view and the individual's view. Catterberg and Moreno (2005) analysed multiple factors and found that political trust is higher when financial satisfaction is higher, which is in line with Dincer and Uslaner (2010). Also related to Dincer and Uslaner (2010), Catterberg and Moreno (2005) found that the more corruptness is tolerated the lower political trust is.

Dutta and Radner (2004) analysed the optimal type of climate treaty and found that it must be self-enforcing. This means that both countries should find it in their best interest to uphold the agreements. The model from Dutta and Radner (2004) does not take into account uncertainties nor does it take into account that treaties can create obligations even if these may not be in the best interest of the country.[5]

International law, European Union law and national law

Dependent on a countries methods, treaties from international law can be directly applicable in national law, also known as monism. In some countries, the international treaty first must be converted into national law. This is known as dualism. It is also possible that the relation between national law and international law in a country is somewhere between monism and dualism. For example in the Netherlands art. 93 of the Dutch constitution determines that international treaties are directly applicable if they are 'binding for all'. The meaning of binding for all has been determined in the case law Rookverbod (Hoge Raad, 2014). First of all, the

[5] For example in the Netherlands, the so called 'nitrogen crisis' entailed that many projects could no longer be continued in order to reduce nitrogen emissions. This lead to numerous protests amongst builders and farmers.

parties involved in the international law may have already agreed whether it is binding for all. If not, then the provision should be formulated sufficiently precise, such that is can be applied directly as national law. Lastly, the provision has to be formulated in a way such that it is not dependent on certain conditions or other actions and can thus be directly applied in the country as law.

Differently from international law, European Union law is directly applicable, meaning that the laws do not have to be converted into national law. In other words: European Union law is autonomous. Member states have given up some of their sovereignty to become members of the European Union, which makes it directly applicable. When national law and European Union law are conflicting, the outcome of the conflict will be in favour of the European Union. This is also known as the principle of priority.

As shortly mentioned before, in the Netherlands international law as meant in art. 93 of the Dutch constitution will be applied even if they are conflicting with national laws (art. 94 of the Dutch constitution). This means that citizens can use certain provisions and invoke rights which they may not have been able to do based on national laws. Similarly, European Union law also invokes rights for citizens, as it is directly applicable in national law. Treaties thus help ensure the government acts in a specific way, namely how the treaty prescribes it to act. In line with the definition of political trust by Hetherington (2005), this would suggest that treaties increase trust. Therefore, it is hypothesized that:

There is a positive relationship between the number of treaties a country is involved in and political trust.

Treaties in practice and uncertainty

A well-known example of the effect of treaties in practice is the Dutch case known as Urgenda (Hoge Raad, 2020). In this case an organisation known as Urgenda sued the Netherlands as they wanted to ensure emissions will be reduced by at least 25% by the end of 2020, as the Netherlands agreed to by signing the United Nations Framework Convention on Climate Change (UNFCCC). In court it was determined that, based on articles 2 and 8 of the European Convention of Human Rights (ECHR), the state must protect her citizens from the threats and dangers that follow from climate change. The judge however does not have the competence to decide how the Dutch government should reach the emission reductions. Nevertheless, the continuous absence of laws that will ensure the reductions are met was decided to be unlawful. Thus, it was ruled that the government should take action to ensure the goal will be reached. How this will be achieved is up to the government itself.

An even more recent example is the case against Royal Dutch Shell (Rechtbank Den Haag, 2021). In this case multiple organisations that fight against climate change have sued Royal Dutch Shell because they believe it does not do enough with regards to reducing emissions. This case differs from Urgenda, as articles from treaties such as the ECHR are applied in situations between citizen and states and not a company. Still, an international standard from the UN Guiding Principles (UNGP) was used in this dispute to determine whether Shell violated norms of care. From it follows that Royal Dutch Shell (RDS) has a certain responsibility to reduce emissions as to respect human rights. It was thus determined that RDS has to reduce CO_2 emissions by 45% at the end of 2030. Royal Dutch Shell plans to appeal this decision. The company has argued that they do not understand why there is a responsibility for them as a company to reduce emissions when there appears not to be any for the individual customer (NRC, 2022).

From the abovementioned examples follows that action is taken to reduce emissions and that even more action is needed to reach certain climate-related goals. It also demonstrates that international agreements made by countries can help enforce these agreements to be upheld, as is the case for the agreements made to reduce emissions. Due to the uncertain nature of climate change it can be difficult to decide what policies would be effective. In both exemplary cases it was evident that there is no certainty regarding the exact trajectory of emissions. Also the effect the emission will have on future temperatures cannot be predicted exactly. Therefore, estimations are used to look at the likelihood that the goals are reached and the possible effects this can have.

There are many factors that determine climate related outcomes. The effects of many of these factors on emission reductions are not precisely determinable. Popp (2010) argues that climate policy influences technological change. Climate policy can motivate companies to improve processes and search for effective ways to do so. These innovations will then lower the costs of reducing emissions. This would imply that policies to reduce emissions may not only reduce emissions in the intended way, but also by incentivizing companies to innovate certain processes such that it becomes less costly to reduce emissions. Moreover, in research by Gillingham et al. (2015) parametric uncertainties in empirical models were found to be important in estimating climate related outcomes.

Similarly, Frey (1992) did a quantitative analysis regarding climate policy and argues that policy makers can make incorrect discissions if the effects of uncertainties are not fully understood.

Even though uncertainty is argued to be an important factor in climate-related policies, Knaggard (2014) found using Swedish data from 1975-2007 that scientific uncertainty had only a small role in climate policy. This finding is in line with the statement from Frey (1992) that uncertainty is generally not incorporated in decision making regarding climate policies. As through treaties countries can make agreements on how to fight climate change, it is interesting to investigate how climate-related uncertainties affect what types of treaties are signed. From this, the following question arises:

What type of treaty do countries prefer given climate-related uncertainties?

Principals of good governance

Rothstein (2000) writes that ethical norms and codes that work against self-interested actions are needed to improve trust. Moreover, he argues that the history of actions of an institution is important to show trustworthiness. The norms Rothstein (2000) writes about are quite similar to the principles of good governance. According to Graham, Plumptre, and Amos (2003) governance is the way in which institutions make decisions. It is dependent on a system of different types of agreements that determine who is allowed to make choices, how they should make them and who will be responsible. Turner (2015) states that good governance is important for climate policies, as it improves political trust between states, which helps states work together.

In the Netherlands, many principals of good governance are included in national law, both written and unwritten. An example is the formal 'zorgvuldigheidsbeginsel' (art. 3:2 of the Dutch Civil Code), which states that the involved government body should collect all relevant information and weigh all relevant interests when preparing to make a decision. Other examples are the principles of transparency, impartialness, principals of trust and more. If these principals are violated, it can lead to annulments (art. 8:72 DCC) or to new decisions. These principals thus help protect citizens from unfair decision processes. Moreover, there are numerous cases won by citizens based on these principles (Afdeling Rechtspraak van de Raad van State, 1977; Raad van State, 2018; Raad van State, 2019).

There are also principals of good governance that have universal recognition based on the United Nations Development program (Graham, Plumptre and Amos; 2003 & United Nations 2021). For example, some principles of fairness are described in articles 1, 2, 5, 7, 10 and 17 of the Universal Declaration of Human Rights (Graham et al. 2003). Some of these principles have been incorporated in treaties. Other countries, like the Netherlands, may also have similar principles in national law. The principles of good governance thus also support the hypothesis.

Mistakes

When citizens feel like they have been denied a right or when they think they have been treated unfairly, they can go to court. Examples have been given of cases in which citizens used treaties or the principles of good governance in lawsuits. However, sometimes when governments make decisions, this can have negative costly consequences for citizens. For example, a shop owner that has less profit due to a road being under construction and therefore customers can no longer reach his shop. This could also be seen as negative externalities of government actions. Externalities are also quite common in issues regarding climate change. If a country makes a policy to reduce its emissions, there is a worldwide benefit. On the other hand, reducing emissions often means that certain sectors have to make changes. For example, amongst many measures to reduce nitrogen emissions, livestock holders in the Netherlands are given subsidies to stop their business (Rijksoverheid, 2019).

In the Netherlands under certain conditions citizens can receive money if they are negatively affected by actions of the government. This is also known as 'schadevergoeding' and 'nadeelcompensatie'. The difference between these terms is that the former is used when the government has acted in a way they were not allowed to and the latter when the government has acted in a way they were allowed to. So through 'nadeelcompensatie', even if actions are legally taken by the government, citizens are protected from losses that 'go beyond normal societal risks' as described in art. 4:162 DCC. Similarly, if mistakes are made by the government citizens can be compensated by 'schadevergoeding'.

Data

The data on trust is obtained from OECD (2021). It is the percentage of people that answered they have confidence in their national government. The sample is designed such that it is representative for the population of the country that is at least 15 years old. Data on trust is obtained for the years 2016-2020. There are 41 countries in this dataset, of which 27 are members of the Council of Europe.[6] Data on GDP per capita is obtained from the World Bank Group (2022). GDP per capita is defined as the gross domestic product divided by the average population in that year. GDP per capita is expressed in current US dollars to make it comparable amongst the different countries. The data on GDP per capita is obtained for the years 2016-2020.

Data on the number of European treaties a country is involved in is obtained from the Council of Europe (2021). On this website there are numerous lists of signatures and ratifications of European treaties. For all 41 countries the treaty list for the specific country has been used to find the total number of European treaties the country is involved in. This has been done manually by counting the number of treaties for each year from these lists. Denunciations are excluded from the total number of treaties. For the date on which a country is involved in a specific treaty the date of signature has been used. If a country has not signed the treaty, but they have ratified it, the date of ratification is used. To my knowledge, there is no readily available existing dataset containing the number of treaties a country is involved in. Therefore the abovementioned information is used to create a dataset. This data is based on the information that was available in June 2021 on the website of the Council of Europe. The used dataset can be found in Appendix C.

As can be seen in Table 1, the average percentage of citizens that trust their national government amongst all 41 countries is 44.803%. The lowest percentage of 13.249 belonging to Greece in 2016 and the highest percentage of 84.998 from Switzerland in 2018. The average number of treaties is 95.554 and average GDP per capita is 35844.33 US$. The lowest level of GDP per capita is 5334.556 US$ for Colombia in 2020 and the highest is 117197.5 US$ for Luxembourg in 2018. In the sample 65.3% of countries is a member of the Council of Europe.

[6] The member-countries in this dataset are: Austria, Belgium, Switzerland, the Czech Republic, Germany, Denmark, Spain, Estonia, Finland, France, the United Kingdom, Greece, Hungary, Ireland, Iceland, Italy, Lithuania, Luxembourg, Latvia, the Netherlands, Norway, Poland, Portugal, the Slovak Republic, Slovenia, Sweden and Turkey. Non-members are: Australia, Brazil, Canada, Chile, Colombia, Costa Rica, Israel, Japan, Korea, Mexico, New Zealand, Russia, the United States and South Africa.

Table 1

Descriptive statistics of the variables Trust, Number of treaties a country is involved in, GDP per capita and if the country is a member of the Council of Europe for 41 countries.

Variable	Observations	Mean	Standard deviation	Minimum	Maximum
Trust	202	44.803	15.800	13.249	84.998
Number of treaties	202	95.554	65.819	1	189
GDP per capita	202	35844.33	23499.17	5334.556	117197.5
Member council	202	0.653	0.477	0	1

Comparing tables 5 and 6 in Appendix A, it can be seen that countries that are member of the Council of Europe have about 6 percentage points higher trust levels than non-member countries. They also have higher average GDP per capita, namely 40340.92 US$ compared to 27365.05 US$. They also have a higher average number of treaties they are involved in. Respectively 140.25 and 11.271, which is logical as the treaties in this dataset are European treaties and mostly European countries are members of the Council of Europe. Interestingly, there are few countries with around 130 total treaties, as can be seen in Figure 17 in Appendix A. Potentially, countries sign certain groups of treaties or sign similar treaties to their neighbouring countries, which might explaining this phenomenon.

Data analysis

As shown in Table 2, regressing the number of treaties a country is involved in on the percentage of citizens that trust their national government yields a positive, significant coefficient.[7] Adding whether a country is a member of the Council of Europe and GDP per capita as control variables slightly changes the coefficient from 0.065 to 0.070. The coefficient remains positive and significant at the 10% level. Adding year fixed effects barely changes the

[7] The coefficient is similar if 2020 is excluded, see Table 7 in Appendix A.

coefficient to 0.070.[8] Thus, a country that is involved in 10 more treaties, ceteris paribus, is associated with 0.7 percentage points more citizens that trust their national government. The coefficient for GDP per capita is also positive and significant at the 1% level. Adding year fixed effects does not alter the coefficient for GDP growth nor does it change the significance.

Table 2

Regressions of the number of treaties a county is involved in on the percentage of citizens from that country that trust their national government for 2016-2020.

Variable	(1)	(2)	(3)
Number of treaties	0.065*** (0.016)	0.074* (0.040)	0.070* (0.041)
Member council		-8.612* (4.923)	-8.095 (5.101)
GDP per capita		0.0004*** (0.000)	0.0004*** (0.000)
Year fixed effects	no	no	yes
Constant	38.595*** (1.642)	29.079*** (1.702)	26.137*** (2.398)
Observations	202	202	202
R-squared	0.073	0.411	0.437

***p<0.01 **p<0.05 *p<0.10.

The coefficients for member of the Council of Europe are negative, implying it decreases trust levels. However, non-member countries are involved in a lot less treaties than member countries are. Taking into account that member countries are involved in on average about 129 more treaties and have on average a higher GDP per capita of 12975.87 US$ (comparing Tables 5 and 6 in Appendix A), and that the coefficients for the number of treaties and GDP per capita are positive, member countries on average have higher levels of trust.

[8] In Table 8 in Appendix A country fixed effects have been added. This however changes the results to a negative, insignificant coefficient. This can be explained due to the limited data and the small changes in the number of treaties between 2016 and 2020. Therefore, similar regressions are done for each individual year.

In Table 3 and Table 4 regressions for the individual years have been done. GDP per capita and whether a country is a member of the Council of Europe have been added as controls in the regressions labelled with ‘b’. Regressions without these control variables have been labelled with an ‘a’ behind the corresponding year. The baseline regression 2017a and 2020a are significant at the 10% level. The other regression coefficients are insignificant. All coefficients for the number of treaties are positive. GDP per capita is a small positive coefficient and is significant at the 1% level in all regressions. This positive correlation between GDP per capita and political trust is also shown in figure 18 in Appendix A.

Table 3

Regressions of the number of treaties a county is involved in on the percentage of citizens from that country that trust their national government for 2016 and 2017.

variable	2016a	2016b	2017a	2017b
number of treaties	0.056 (0.036)	0.082 (0.112)	0.075* (0.038)	0.109 (0.104)
Member council		-10.576 (13.934)		-12.584 (12.741)
GDP per capita		0.0004** (0.0001)		0.0004*** (0.0001)
Constant	35.603*** (3.678)	27.612*** (4.062)	36.882*** (3.874)	27.381*** (3.794)
Observations	41	41	41	41
R-squared	0.0612	0.393	0.090	0.446

***p<0.01 **p<0.05 *p<0.10.

Table 4

Regressions of the number of treaties a county is involved in on the percentage of citizens from that country that trust their national government for 2018, 2019 and 2020.

Variable	2018a	2018b	2019a	2019b	2020a	2020b
Number of treaties	0.058 (0.038)	0.041 (0.088)	0.054 (0.035)	0.122 (0.080)	0.080** (0.036)	0.110 (0.088)

Member council		-6.265 (10.211)		-0.935 (10.125)		-10.765 (10.710)
GDP per capita		0.0004*** (0.0001)		0.0004*** (0.0001)		0.0004*** (0.0001)
Constant	38.851*** (3.819)	28.483*** (3.943)	40.591*** (3.690)	31.493*** (3.872)	41.305*** (3.359)	29.976*** (4.072)
Observations	40	40	40	40	40	40
R-squared	0.058	0.467	0.063	0.399	0.103	0.431

***p<0.01 **p<0.05 *p<0.10.

The model

There are 2 countries denoted by $i \in 1{,}2$. Both countries derive utility from reductions in emissions. Their utility decreases in the costs they have to make to obtain these emission reductions. The total emission reduction y consists of the following:

$$y = \alpha_1 x_1 + \alpha_2 x_2 \tag{1}$$

Here, x_i is the instrument country i can use to reduce emissions. The effectiveness of each instrument is denoted by α_i. The more effective the instrument is at reducing emissions, the higher α_i is.

The utility of a country is the total emission reduction minus the costs the country has made to obtain these reductions. It is denoted as:

$$U_i = y - \frac{1}{2}x_i^2$$ (2)[9]

It can be seen that the cost of the instrument, x_i^2, increases quadratically. The more reductions are obtained by using the same instrument, the more disutility this brings. A real-world example could be that all the emission reductions would be obtained by putting restrictions on livestock farmers. At first, the farmers may cut the amount of animals or switch to other types of food. However, after a while it can become increasingly more difficult to reduce emissions without making drastic changes. Because costs increase quadratically, countries are risk-averse.

[9] Each country derives utility from total emission reductions. Total utility from emission reductions is thus $2y$. Emission reductions in this model can therefore be seen as a pure public good. In real life, pollution due to nitrogen mainly has local effects whereas pollution due to carbon dioxide affects countries worldwide.

When country 1 decides how much of the instrument it will use to reduce emissions, it maximizes its utility:

$$Max_{x_1}^{U_1}: \alpha_1 x_1 + \alpha_2 x_2 - \frac{1}{2} x_1^2 \quad (3)$$

From this follows that county 1 will reduce emissions by setting the instrument to $x_1^* = \alpha_1$. Similarly, country 2 will set its instrument to $x_2^* = \alpha_2$. In Appendix B both derivations can be found more extensively. In this Nash equilibrium, both countries only take into account their own utility. However, the actions of one county also influence the utility of the other country. Namely, the utility of county 1 increases in x_2 with α_2 and vice versa, as can be found in Appendix B.

If both countries would take into account how their actions influence the other country, they would optimize total utility $U_t = U_1 + U_2$. County 1 would then maximize total utility with respect to x_1 as follows:

$$Max_{x_1}^{U_t}: 2\alpha_1 x_1 + 2\alpha_2 x_2 - \frac{1}{2} x_1^2 - \frac{1}{2} x_2^2 \quad (4)$$

It follows that the social optimum $x_1^s = 2\alpha_1$. Similarly, country 2 maximizes total utility with respect to x_2 and would optimally invest its instrument $x_2^s = 2\alpha_2$. Again, these derivations are shown in Appendix B.

Total emission reductions in Nash equilibrium are $y^*(\alpha_1^*, \alpha_2^*) = \alpha_1^2 + \alpha_2^2$. Total emission reductions in social optimum are $y^s(\alpha_1^s, \alpha_2^s) = 2\alpha_1^2 + 2\alpha_2^2$. So, if countries maximise total utility, emissions will be reduced twice as much as they would be if countries only take into account their own utility. Figure 2 below graphically shows emission reductions would be higher if total utility is maximized instead of both countries separately maximizing their own utility.

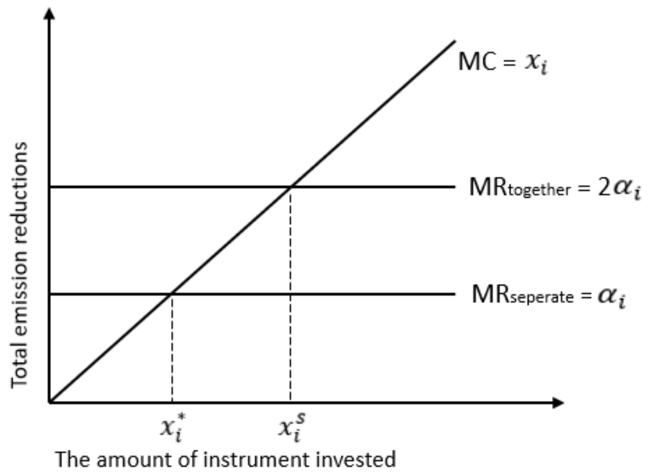

Figure 2. Graphical illustration containing total emission reductions on the y-axis and the level of the instrument on the x-axis containing marginal revenue for total utility and marginal revenue for the countries separate

Total utility in the social optimum is higher than in the Nash equilibrium. In other words, $U_1^S + U_2^S > U_1^* + U_2^*$, as can be seen in Appendix B. Countries would thus always be better off when they can commit to investing the social optimal amount of x_i. However, without a way to ensure countries keep this promise, both countries have an incentive to deviate from the social optimal amount of instruments invested. Below Figure 3 is shown which schematically demonstrates this issue.

Utility for each country		Country 2: Invest α_2		Country 2: Invest $2\alpha_2$	
Country 1	Invest α_1	$\alpha_2^2 + \frac{1}{2}\alpha_1^2$	$\alpha_1^2 + \frac{1}{2}\alpha_2^2$	$2\alpha_2^2 + \frac{1}{2}\alpha_1^2$	α_1^2
	Invest $2\alpha_1$	α_2^2	$2\alpha_1^2 + \frac{1}{2}\alpha_2^2$	$2\alpha_2^2$	$2\alpha_1^2$

Figure 3. Scheme of payoffs for both countries when investing the social optimal level of the instrument verses the Nash equilibrium level of the instrument

From this figure, it can be seen that both countries always have an incentive to invest the Nash equilibrium level of the instrument, even if the other country invests the social optimal level. The payoff for country 1 when investing α_1 is higher than investing $2\alpha_1$ for both situations in which country 2 invests either α_2 or $2\alpha_2$. The same applies for country 2, as payoffs are symmetrical. The calculations for the payoffs in the four situations shown in this scheme can be found in Appendix B.

The situation described above is an example of 'the tragedy of the commons' (Hardin, 2009). It would be in the best interest of countries to take into account the total benefits of emission reductions. However, without a way to ensure this a suboptimal situation occurs. This is also a real-world problem in climate related issues. The externalities of pollution are often hard to estimate and are often not (completely) taken into account.

Signing a treaty

As shown in the beginning of this section, the social optimum yields higher levels of utility for both countries. Thus, if a treaty could be signed by both countries, enforcing the social optimum, this would be in the best interest of both countries. Assumed will be that the treaty is binding, meaning that after a treaty is signed the agreements must be upheld.[10]

In this model, when signing a treaty countries can choose from 2 types of agreements. They can agree to set a level for how much emission reductions each country will make: $\widehat{y_i}$. The other option is to determine how much of the instruments each country will invest: $\widehat{x_i}$. The timing of the model is as follows: first, countries determine what type of agreements they will make and sign the treaty. Only after a treaty has been signed the value of α_i will become known. Both countries are then obliged to act according to the agreements made.

The advantages of agreeing on a certain level of emission reductions $\widehat{y_i}$ is that it ensures enough emission reductions will be made regardless of the effectivity of the instruments. However, if instruments turn out to be relatively inefficient (α_i is low), more of the instruments have to be invested in order to meet the required reductions. When choosing a fixed level of how much instruments will be invested, $\widehat{x_i}$, there is no risk with regards to excessive costs, as even if the instrument would be relatively ineffective no extra investments and therefore no extra costs have to be made. The downside is that emission reductions may not be enough.

Parameter α_i can take two values, a high or a low value. The high value is α_h. This happens with probability ½. With probability ½ the instrument is relatively ineffective and has value α_l. So: $\alpha_i \in \{\alpha_l, \alpha_h\}$. When dealing with uncertainty, countries do not know beforehand

[10] In practice treaties and other agreements between countries are not always uphold. From the scheme in Figure 2 follows that adding a penalty for not upholding the agreements may help if it makes deviating from the social optimum a worse alternative than following the social optimum. From this follows that the penalty p should be at least $p > \frac{1}{2}\alpha_i^2$. In this paper it will be assumed that treaties also are binding without any penalty.

if the instrument is going to be relatively effective or ineffective. Assumed will be that $\alpha_h > \alpha_l > 0$. This means that a relatively ineffective instrument will always contribute to emission reductions, even if this contribution is only small. In the remainder of this thesis the type of treaty that is based on agreeing that a certain level of emission reductions must be obtained will be referred to as the emission-type (y-type). The other treaty, based on a fixed amount of instruments, as the instrument-type (x-type).

Treaties under full certainty

Suppose the effectivity of the instrument α_i is known in advance and $\alpha_1 = \alpha_2 = \alpha$. In other words, there is full certainty. Then, when choosing what type of treaty to sign, either based on a certain level of y_i or x_i, the same utility levels should be obtained. As for the individual country $y_i = x_i\alpha_i$, $x_i = \frac{\hat{y}_i}{\alpha_i}$. Thus total utility for the emission-type treaty is:

$$U_{1+2}^{y-type} = 2\alpha\left(\frac{\hat{y}_1}{\alpha}\right) + 2\alpha\left(\frac{\hat{y}_2}{\alpha}\right) - \frac{1}{2}\left(\frac{\hat{y}_1}{\alpha}\right)^2 - \frac{1}{2}\left(\frac{\hat{y}_2}{\alpha}\right)^2 \tag{5}$$

Countries then decide what level of $\hat{y}_i$ they will incorporate in the treaty by maximizing U_{1+2}^{y-type}. For country 1, maximizing with respect to $\hat{y}_1$ yields:

$$Max_{\hat{y}_1}^{U_{1+2}^{y-type}} : 2\alpha\left(\frac{\hat{y}_1}{\alpha}\right) + 2\alpha\left(\frac{\hat{y}_2}{\alpha}\right) - \frac{1}{2}\left(\frac{\hat{y}_1}{\alpha}\right)^2 - \frac{1}{2}\left(\frac{\hat{y}_2}{\alpha}\right)^2 \tag{6}$$

From this follows that $\hat{y}_1^* = 2\alpha^2$. Similarly, country 2 optimally would like to set $\hat{y}_2^* = 2\alpha^2$.

For the treaty type based on a pre-set amount of emission reductions the utility for each country is:

$$U_{1+2}^{x-type} = 2\alpha\hat{x}_1 + 2\alpha\hat{x}_2 - \frac{1}{2}(\hat{x}_1)^2 - \frac{1}{2}(\hat{x}_2)^2 \tag{7}$$

When deciding the optimal level of instrument to invest, country 1 maximizes expression (7) with respect to $\hat{x}_1$:

$$Max_{\hat{x}_1}^{U_{1+2}^{x-type}} : 2\alpha\hat{x}_1 + 2\alpha\hat{x}_2 - \frac{1}{2}(\hat{x}_1)^2 - \frac{1}{2}(\hat{x}_2)^2 \tag{8}$$

From this follows that country one optimally invests $\hat{x}_1^* = 2\alpha$ and, as both countries are symmetrical, $\hat{x}_2^* = 2\alpha$. Inserting these values into the total utility functions shows that utility for both types of treaties are the same. Total utility from the y-type treaty is: $U_{1+2}^{y-type}(\hat{y}_1^* = 2\alpha^2, \hat{y}_2^* = 2\alpha^2) = 2\alpha\left(\frac{2\alpha^2}{\alpha}\right) + 2\alpha\left(\frac{2\alpha^2}{\alpha}\right) - \frac{1}{2}\left(\frac{2\alpha^2}{\alpha}\right)^2 - \frac{1}{2}\left(\frac{2\alpha^2}{\alpha}\right)^2 = 4\alpha^2$. Total utility from the x-type treaty is: $U_{1+2}^{x-type}(\hat{x}_1^* = 2\alpha, \hat{x}_2^* = 2\alpha) = 2\alpha * 2\alpha + 2\alpha * 2\alpha - \frac{1}{2}(2\alpha)^2 - \frac{1}{2}(2\alpha)^2 = 4\alpha^2$. So $U_{1+2}^{y-type}(\hat{y}_1^* = 2\alpha^2, \hat{y}_2^* = 2\alpha^2) = U_{1+2}^{x-type}(\hat{x}_1^* = 2\alpha, \hat{x}_2^* = 2\alpha)$.

As follows from the calculations above, knowing exactly how effective the instrument will be at reducing emissions, both types of treaties yield the same level of utility. Thus when there is full certainty with regard to the effectivity of the instrument it will not matter to the countries what type of treaty is chosen. This is logical, as under full certainty a certain amount of instrument will always lead to the same amount of emission reductions as the effectivity of this instrument is known in advance.

Treaties under uncertainty

Assumed will be that $\alpha_1 = \alpha_2$. With probability $\frac{1}{2}$ the value of α_1 and α_2 is α_l and with probability $\frac{1}{2}$ it is α_h.[11] If $\alpha_i = \alpha_l$ the instrument is relatively inefficient at reducing emissions, but it will still have a positive effect on emission reductions. Therefore another assumption on these parameters is: $0 < \alpha_l < \alpha_h$. If the instrument has either a low efficiency or a high efficiency, it will apply to both countries. Meaning, that if country 1 has an ineffective instrument country 2 will also have an ineffective instrument.

When countries decide what the optimal level of $\hat{x}_i$ to incorporate in the treaty would be, they maximize total utility with respect to $\hat{x}_i$. For country 1 this goes as follows:

$$Max_{\hat{x}_1}^{U_{1+2}^{x-type}} : \frac{1}{2}(2\alpha_l\hat{x}_1 + 2\alpha_l\hat{x}_2) + \frac{1}{2}(2\alpha_h\hat{x}_1 + 2\alpha_h\hat{x}_2) - \frac{1}{2}(\hat{x}_1)^2 - \frac{1}{2}(\hat{x}_2)^2 \quad (9)$$

With probability $\frac{1}{2}$ the effectivity of the instrument is low, in which case the benefits to both countries of the emission reductions are $2\alpha_l\hat{x}_1 + 2\alpha_l\hat{x}_2$. Similarly, the probability of the instrument being highly effective ($\frac{1}{2}$) is multiplied with the total benefits of emission reductions when instruments are effective: $2\alpha_h\hat{x}_1 + 2\alpha_h\hat{x}_2$. The costs of emission reductions are subtracted. It follows that country 1 would optimally like to invest $\hat{x}_1^* = \alpha_l + \alpha_h$. Similarly, country two optimally invests $\hat{x}_2^* = \alpha_l + \alpha_h$. More extensive calculations can be found in Appendix B.

For deciding what level of $\hat{y}_i$ is optimal to incorporate in the treaty countries maximize total utility with respect to $\hat{y}_i$. Again, for country 1 this expression is:

$$Max_{\hat{y}_1}^{U_{1+2}^{y-type}} : \frac{1}{2}\left(2\alpha_l\frac{\hat{y}_1}{\alpha_l} + 2\alpha_l\frac{\hat{y}_2}{\alpha_l} - \frac{1}{2}\left(\frac{\hat{y}_1}{\alpha_l}\right)^2 - \frac{1}{2}\left(\frac{\hat{y}_2}{\alpha_l}\right)^2\right) + \frac{1}{2}\left(2\alpha_h\frac{\hat{y}_1}{\alpha_h} + 2\alpha_h\frac{\hat{y}_2}{\alpha_h} - \frac{1}{2}\left(\frac{\hat{y}_1}{\alpha_h}\right)^2 - \frac{1}{2}\left(\frac{\hat{y}_2}{\alpha_h}\right)^2\right) \quad (10)$$

[11] Allowing for situations where $\alpha_1 \neq \alpha_2$ does not affect the results. This can be found in Appendix B.

Total utility for the situation $\alpha_1 = \alpha_2 = \alpha_l$ is the first term in expression (10). Here the probability of α_l occurring is multiplied with the total utility in this situation. Similarly the second term in expression (10) is the situation in which the instrument is relatively effective. The probability of α_h occurring is multiplied with the total utility if the instrument were to be effective at reducing emissions. From (10) follows that country 1 optimally reduces emissions with $\hat{y}_1^* = \frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}$. Similarly $\hat{y}_2^* = \frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}$, as can be seen in Appendix B.

Comparing expressions (9) and (10), it can be seen that the two types of treaties put the risks at two different places. The x-type treaty places the risk at the emission reductions. It can be seen that the costs for this type of treaty are always the same ($\frac{1}{2}(\hat{x}_1)^2 + \frac{1}{2}(\hat{x}_2)^2$) and are only dependent on the chosen amount of instrument that will be invested. There is however uncertainty with regard to the total emission reductions, as this can turn out either low or high dependent of how effective the instruments will be. For the y-type treaty it is the opposite. It is certain how much emission reductions will be obtained, namely $\hat{y}_1^* + \hat{y}_2^*$. The costs however are uncertain as these depend on α_l and α_h.

The utility for country 1 when signing the x-type treaty is determined by inserting $\hat{x}_1^*$ and $\hat{x}_2^*$ into U_1^{x-type}. The equation then becomes:

$$U_1^{x-type}(\hat{x}_1^* = \alpha_l + \alpha_h, \hat{x}_2^* = \alpha_l + \alpha_h) = \frac{1}{2}(\alpha_l(\alpha_l + \alpha_h) + \alpha_l(\alpha_l + \alpha_h)) + \frac{1}{2}\big(\alpha_h(\alpha_l + \alpha_{h)} + \alpha_h(\alpha_l + \alpha_h)\big) - \frac{1}{2}(\alpha_l + \alpha_h)^2 \qquad (11)$$

Rewriting this equation yields that $U_1^{x-type} = \frac{1}{2}(\alpha_l + \alpha_h)^2$. Similarly $U_2^{x-type} = \frac{1}{2}(\alpha_l + \alpha_h)^2$, as can be found in Appendix B. So, $U_{1+2}^{x-type} = (\alpha_l + \alpha_h)^2$. Differentiating the total utility with respect to α_l and α_h yields $U_{1+2}^{x-type'}(\alpha_l) = \alpha_l + 2\alpha_h$ and $U_{1+2}^{x-type'}(\alpha_h) = \alpha_h + 2\alpha_l$. Because $0 < \alpha_l < \alpha_h$, this means that total utility always increases when the instrument becomes more effective. This is logical, as the costs are certain in the x-type treaty but the benefits are uncertain. The more effective the instrument, the higher emission reductions will be for a given investment of $\hat{x}_i^*$.

When signing the y-type treaty, utility for a country is found by inserting $\hat{y}_1^*$ and $\hat{y}_2^*$ into U_i^{y-type}. For country 1 this is:

$$U_1^{y-type}\left(\hat{y}_1^* = \frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}, \hat{y}_2^* = \frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}\right) = \frac{1}{2}\left(\alpha_l \frac{\frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}}{\alpha_l} + \alpha_l \frac{\frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}}{\alpha_l} - \frac{1}{2}\left(\frac{\frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}}{\alpha_l}\right)^2\right) +$$

$$\frac{1}{2}\left(\alpha_h \frac{\frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}}{\alpha_h} + \alpha_h \frac{\frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}}{\alpha_h} - \frac{1}{2}\left(\frac{\frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}}{\alpha_h}\right)^2\right) \quad (12)$$

It follows that $U_1^{y-type} = \frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2} = U_2^{y-type}$, see Appendix B. So total utility $U_{1+2}^{y-type} = \frac{8\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}$. Differentiating U_{1+2}^{y-type} with respect to α_l and α_h yields that total utility always increases in both these parameters. However, at some point, the higher these parameters become, the lower the increase is, as is shown in figure 19 in Appendix B.[12] This is because the more effective the instruments are, the lower the costs to obtain a certain level of emission reductions for any given amount of invested instruments. However, as the costs are $\frac{1}{2}\left(\frac{\hat{y}_i^*}{\alpha_i}\right)^2$, the higher α_i becomes the less the value of $\frac{\hat{y}_i^*}{\alpha_i}$ decreases for an additional increase in effectivity. In other words, a certain increase in effectivity lowers costs more if α_i is relatively low.

Figure 4 below shows a figure comparing total utility under the x-type treaty with total utility under the y-type treaty. The red line represents total utility under the x-type treaty and the blue line represents total utility under the y-type treaty. It can be seen that utility will always be higher under the x-type treaty. Only when $\alpha_h = \alpha_l$ this difference is zero, as in this point there is no uncertainty as there is no longer a relatively ineffective instrument and a relatively effective instrument. As shown in the section: '*Treaties under full certainty*' it will not matter to countries what type of treaty they sign if there is full certainty.

[12] Due to the complexity of these equations, this has not been shown algebraically but through plotting the figures.

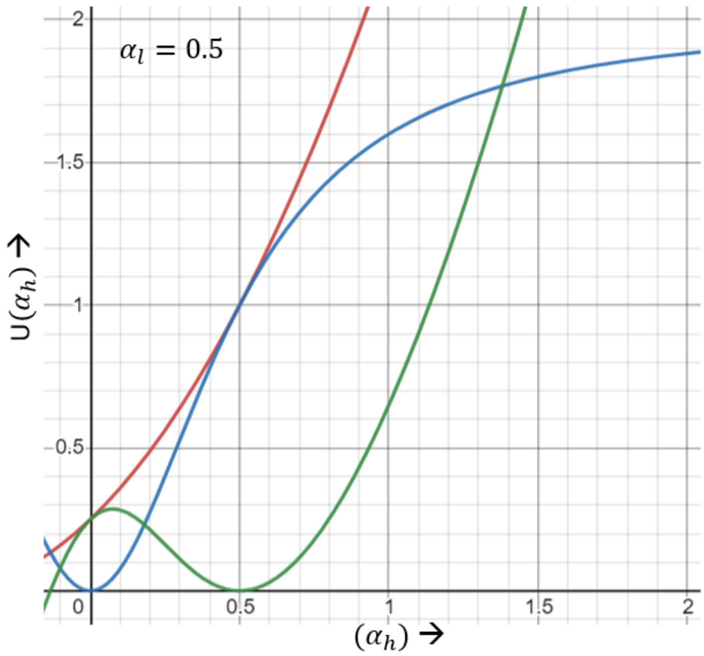

Figure 4. Plots of U_{1+2}^{x-type} (red), U_{1+2}^{y-type} (blue) and $U_{1+2}^{x-type} - U_{1+2}^{y-type}$ (green) for $\alpha_l = 0.5$

The green line is the difference between U_{1+2}^{x-type} and U_{1+2}^{y-type}. This line also shows that for all positive values of α_h utility is always higher when signing a treaty based on a fixed investment of x_i compared to signing a treaty based on a fixed amount of emission reductions y_i. As the value of α_l is 0.5 in figure 3, the difference is 0 at $\alpha_h = 0.5$. In Figure 20 in Appendix B the difference in utility for the 2 types of treaties has also been plotted for other values of α_l. From these plots it follows that for all values of $0 < \alpha_l < \alpha_h$ it is the case that $U_{1+2}^{x-type} > U_{1+2}^{y-type}$.[13]

Summary of the results

In the institutional framework it is argued that citizens can obtain rights from treaties. It is imbedded in the Dutch constitution that, if certain conditions are met, international law has priority over national law in case they conflict. European Union law is directly applicable for member countries, as they have given up part of their sovereignty. Principals of good governance also provide citizens assurances in decision making processes by government bodies.

[13] See 13.

In the data analysis section of this thesis the relationship between the number of treaties a country is involved in and the level of political trust in that country was investigated. From this analysis a positive correlation between the number of treaties a county is involved in and the level of political trust in this country is found. The more treaties a country has signed, ceteris paribus, the higher on average political trust in that country will be.

In the model section it was found that countries always prefer to sign a treaty based on investing a fixed amount of the instruments. By investing a fixed amount of instruments, the costs are not uncertain. If they were to sign a treaty based on a fixed level of emission reductions, the costs could turn out high if the instrument is relatively ineffective. Countries thus prefer risking that low emission reductions are obtained over the risk of having to make high costs in order to obtain a specific level of reductions.

Given the rights that citizens can evoke from treaties and the positive correlation between political trust and the number of treaties a country is involved in, it would be expected that political trust is higher for countries that sign treaties based on a pre-set level of emission reductions. This is because these types of treaties give citizens the certainty that emission reductions are met. In practice, if countries would not uphold the agreements made in these treaties, citizens could potentially enforce this by going to court as has been done in Dutch case law.

Conclusion and discussion

This thesis had the following research question: *What treaties are efficient given climate related uncertainties and how do treaties affect political trust*? This was investigated by looking at two questions using literature, data and a model. The data was used for the hypothesis: *There is a positive relationship between the number of treaties a country is involved in and political trust.*

Though the data shows a positive relation between the number of treaties a country is involved in and the level of political trust in that country, some caution is in place. The data used for this analysis is relatively limited. This is due to the fact that, to the best of my knowledge, there is not much data on the number of treaties a country is involved in. Therefore a dataset was made by using the information on the treaties signed by countries on the website of the Council of Europe (2021). This has been done by manually counting the treaties in the lists for 41 countries over the years 2016-2020. Control variables were added and regressions were made excluding 2020 to check if the covid-pandemic had a noticeable effect on political trust. Still, the relation is likely not causal but correlational. The data analysis is limited to European treaties only, so potentially this positive correlation is not found when looking at more countries outside of the Council of Europe.

The positive correlational evidence is interesting because of the importance treaties have in politics. Also, political trust can have many effects on a society as it relates to corruption, financial satisfaction and more as follows from literature from Dincer and Uslaner (2010) and Catterberg and Moreno (2005). Future research could entail further analysis into the topic of political trust specifically in relation to treaties. Perhaps better and more extensive data could be used that takes into account more types of treaties, more countries and more control variables.

The model was used to answer the question: *What type of treaty do countries prefer given climate-related uncertainties?* In this model countries could choose from two types of treaties. They prefer a treaty in which they agree to invest a pre-set amount of instruments, as this means the costs are not dependent on the uncertain effectivity of the instruments. The downside to this type of treaty is that emission reductions can turn out to be relatively low. Even though emission reductions may be low, countries rather sign treaties that do not involve the possibility of making relatively high costs.

In practice, this could potentially have devastating effects due to the consequences of climate change. To fight climate change, adequate action is needed. If countries however are unwilling to guarantee emission reductions, they may not do enough. Presumably, countries will always be risk averse. In practice, all countries will try to cut costs. It is thus important to be aware of the potential consequences this could have, especially in the context of climate change. The assumption that countries benefits increase linearly in emission reductions may not be realistic. Perhaps, as climate change becomes even more important, countries might be more willing to make high costs or take risks to reduce emissions. Also, the preference of countries for treaties that are based on a fixed amount of instruments could imply lower levels of political trust compared to treaties that ensure emission reductions. This is due to the fact that for such types of treaties citizens have no guarantee that the government will reduce enough emissions, potentially lowering political trust in that country.

In this model, each country can reduce emissions through the usage of 1 type of instrument. In practice, there are many ways to reduce emissions. Also, only uncertainty about the effectiveness of the instrument is taken into account. There are many more uncertainties regarding climate change, which future research could potentially look into. As climate change is a global problem and it is becoming increasingly more important that countries work together, more research on this topic is needed.

References

Afdeling Rechtspraak van de Raad van State. (1977). Mevrouw Cupido. Retrieved from ECLI:NL:RVS:1977:AM3829 - AB 1978, 97: ARRvS, 17-11-1977: Cupido | Navigator

Catterberg, G. & Moreno, A. (2006). The Individual Bases of Political Trust: Trends in New and Established Democracies. *International Journal of Public Opinion Research*, *18*(1), 31-48.

Council of Europe. (2021). Treaty list for a specific state. Retrieved from Full list (coe.int)

Dincer, O.C. & Uslaner, E.M. (2010). Trust and growth. *Public Choice, 142,* 59-67.

Dutta, P. K., & Radner, R. (2004). Self-enforcing climate-change treaties. *Proceedings of the National Academy of Sciences*, *101*(14), 5174-5179.

Frey, H.C. (1992). Quantitative analysis of uncertainty and variability in environmental policy making. *Fellowship Program for Environmental Science and Engineering, American Association for the Advancement of Science, Washington, DC*.

Gillingham, K., Nordhaus, W.D., Anthoff, D., Blanford, G., Bosetti, V., Christensen, P., McJeon, H., Reilly, J. & Sztorc, P. (2015). *Modeling uncertainty in climate change: A multi-model comparison*. National Bureau of Economic Research Working Paper 21637.

Graham, J., Plumptre, T. W., & Amos, B. (2003). Principles for good governance in the 21st century. Retrieved from 9. Graham Amos Plumptre20200603-39838-ysrafx-with-cover-page-v2.pdf (d1wqtxts1xzle7.cloudfront.net)

Grönlund, K. & Setälä, M. (2007). Political Trust, Satisfaction and Voter Turnout. *Comperative European Politics, 5,* 400-422.

Hardin, G. (2009). The tragedy of the commons. *Journal of Natural Resources Policy Research*, *1*(3), 243-253.

Hetherington, M.J. (2005). *Why Trust Matters: Declining Political Trust and the Demise of American Liberalism.* Princeton, New Jersey: Princeton University Press.

Hoge Raad. (2004). Rookverbod. Retrieved from ECLI:NL:HR:2014:2928, Hoge Raad, 13/02931 (rechtspraak.nl)

Hoge Raad. (2020). Urgenda. Retrieved from ECLI:NL:HR:2019:2006, Hoge Raad, 19/00135 (rechtspraak.nl)

Knaggard, A. (2014). What do policy-makers do with scientific uncertainty? The incremental character of Swedish climate change policy-making. *Policy Studies*, *35*(1), 22-39.

Marien, S. & Hooghe, M. (2011). Does political trust matter? An empirical investigation into the relation between political trust and support for law compliance. *European Journal of Political Research*, *50,* 267-291.

McLaren, L. (2016). Immigration, national identity and political trust in European democracies. *Journal of Ethnic and Migration Studies, 43*(3), 379-399

NRC. (2022). Shell in hoger beroep in klimaatzaak van Milieudefensie. Retrieved from Shell in hoger beroep in klimaatzaak van Milieudefensie - NRC

OECD. (2021). *Trust in government* [Dataset]. Retrieved from General government - Trust in government - OECD Data

Popp, D. (2010). *Innovation and Climate Policy.* NBER Working Paper No. 15673. Retrieved from w15673.pdf (nber.org)

Raad van State. (2018). Woningsluiting. Retrieved from ECLI:NL:RVS:2018:738, Raad van State, 201701996/1/A3 (rechtspraak.nl)

Raad van State. (2019). Vertrouwensbeginsel. Retrieved from ECLI:NL:RVS:2019:1694, Raad van State, 201802496/1/A1 (rechtspraak.nl)

Rechtbank Den Haag. (2021). Retrieved from ECLI:NL:RBDHA:2021:5337, Rechtbank Den Haag, C/09/571932 / HA ZA 19-379 (rechtspraak.nl)

Rijksoverheid. (2019). Maatregelen om stikstofprobleem op te lossen. Retrieved from Maatregelen om stikstofprobleem op te lossen | Aanpak stikstof | Rijksoverheid.nl

Rothstein, B. (2000). Trust, Social Dilemmas and Collective memories. *Journal of Theoretical Politics, 12*(4), 477-501.

The World Bank Group. (2022). *GDP per capita (current US$)* [Dataset]. Retrieved from GDP per capita (current US$) | Data (worldbank.org)

Trüdinger, E. M., & Steckermeier, L. C. (2017). Trusting and controlling? Political trust, information and acceptance of surveillance policies: The case of Germany. *Government Information Quarterly, 34*(3), 421-433.

Turner, S. (2015). Embedding principles of good governance into the 2030 climate & energy framework. Retrieved from turner 2015-six principles of good governance.pdf (foeeurope.org)

United Nations. (2021). *Universal Declaration of Human Rights.* Retrieved from Universal Declaration of Human Rights | United Nations

United Nations Framework Convention on Climate Change. (2021). *The Paris Agreement.* Retrieved from The Paris Agreement | UNFCCC

Appendix A: data analysis

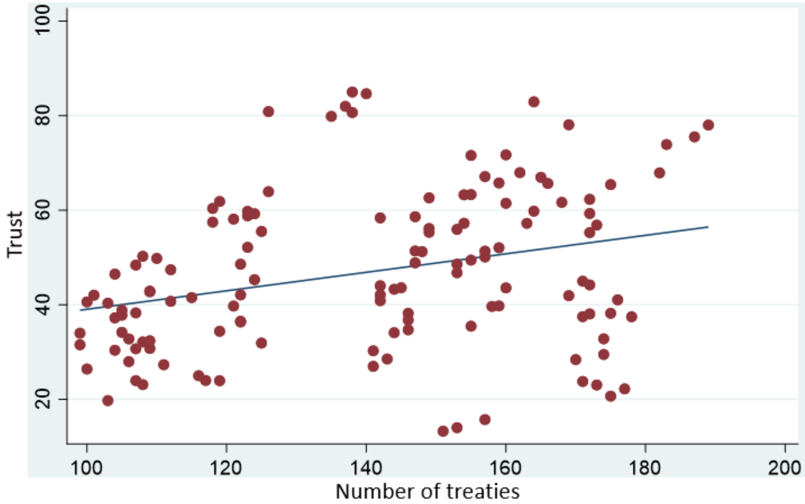

Figure 5. Relation between trust and the number of treaties of 27 countries that are members of the council of Europe for the years 2016-2020

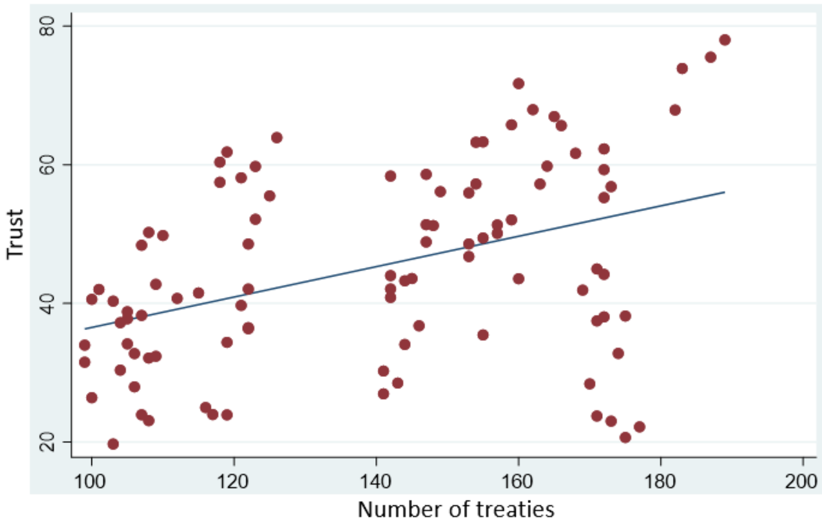

Figure 6. Relation between trust and the number of treaties of 25 countries that are members of the council of Europe for the years 2016-2019

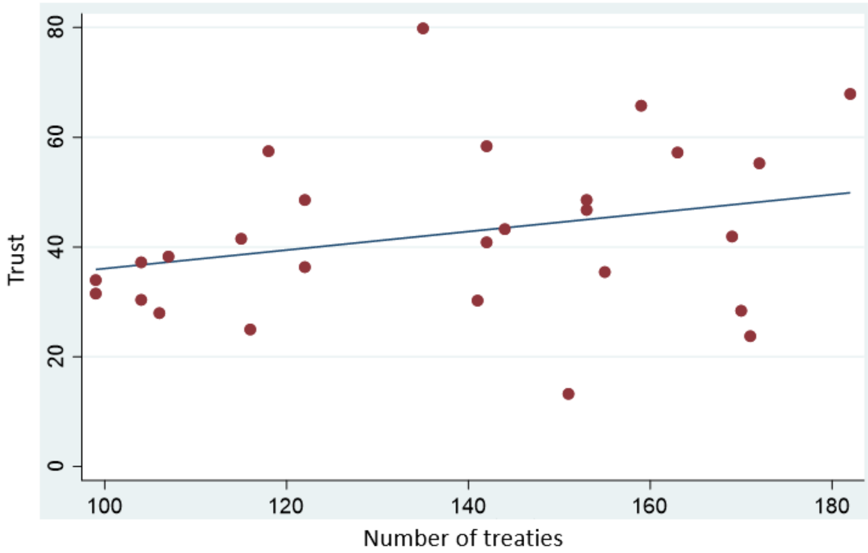

Figure 7. Relation between trust and the number of treaties of 27 countries that are members of the council of Europe for the year 2016

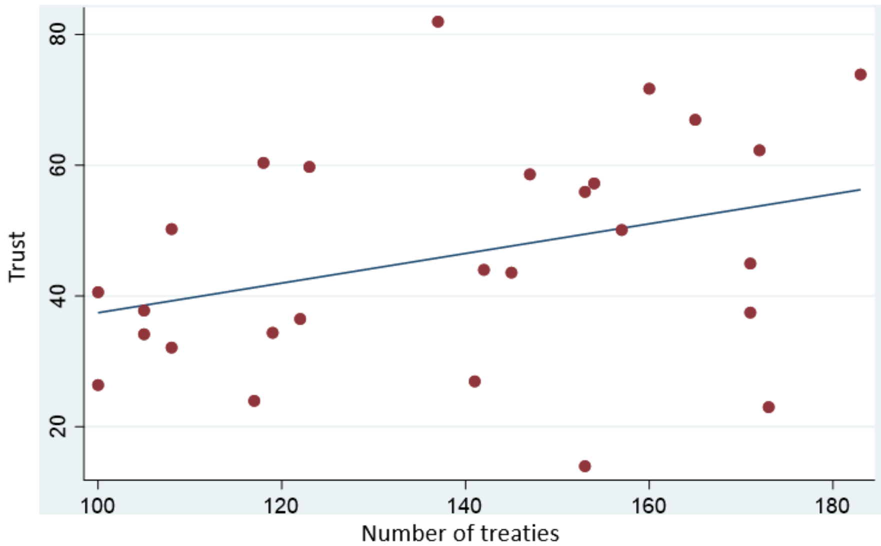

Figure 8. Relation between trust and the number of treaties of 27 countries that are members of the council of Europe for the year 2017

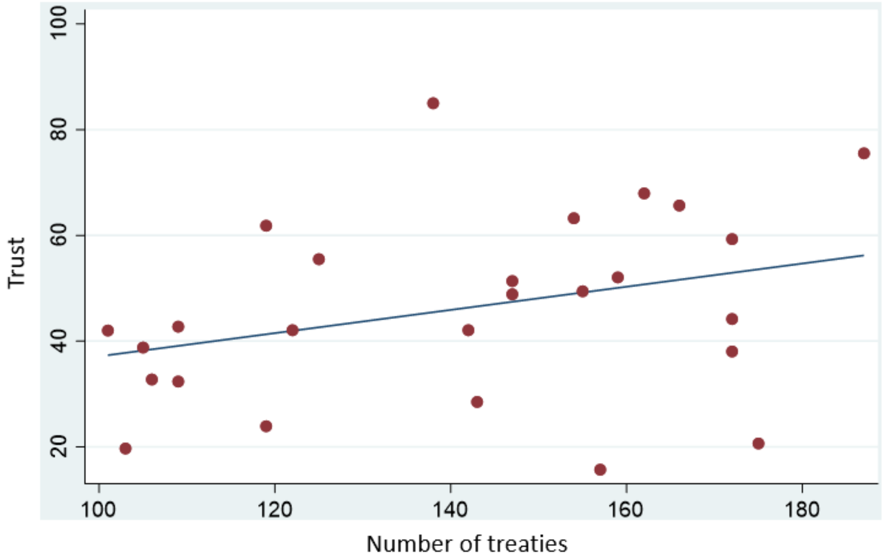

Figure 9. Relation between trust and the number of treaties of 26 countries that are members of the council of Europe for the year 2018

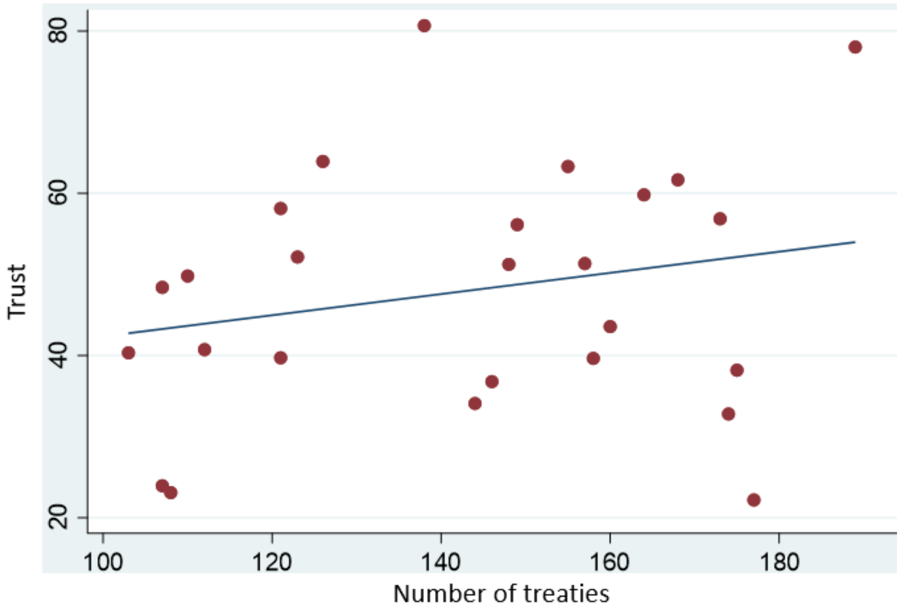

Figure 10. Relation between trust and the number of treaties of 26 countries that are members of the council of Europe for the year 2019

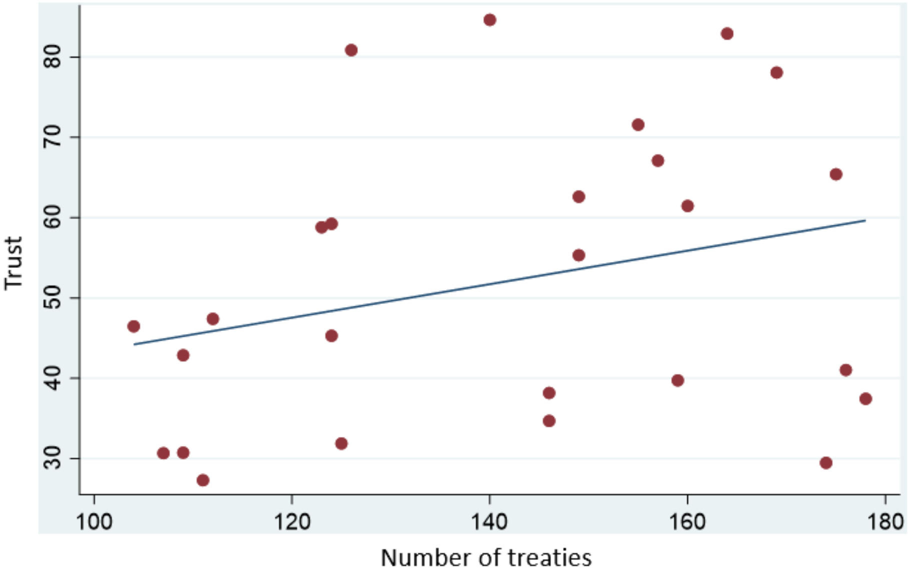

Figure 11. Relation between trust and the number of treaties of 26 countries that are members of the council of Europe for the year 2020

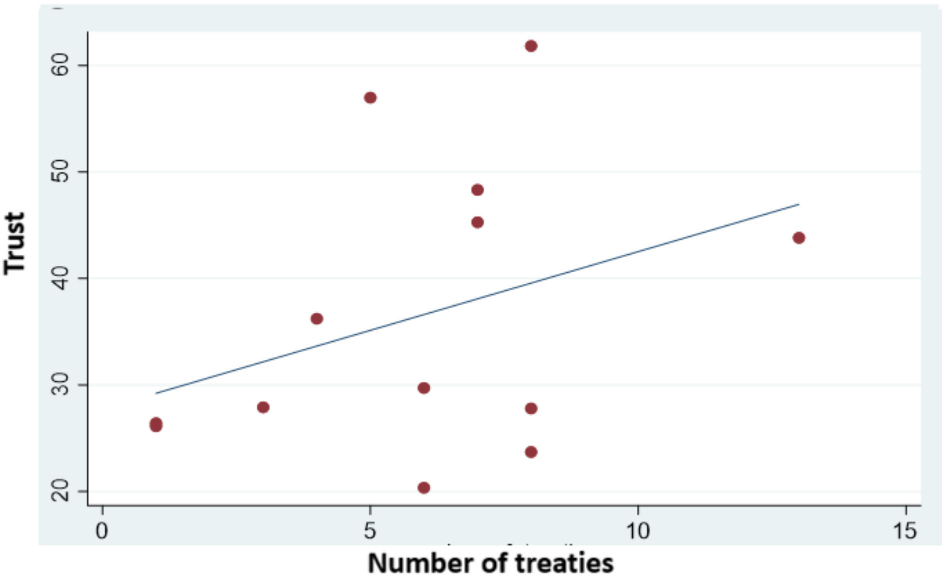

Figure 12. Relation between trust and the number of treaties of 12 countries that are not members of the council of Europe for the year 2016[14]

[14] Russia is omitted from figures 12 to 16 as it is an outlier.

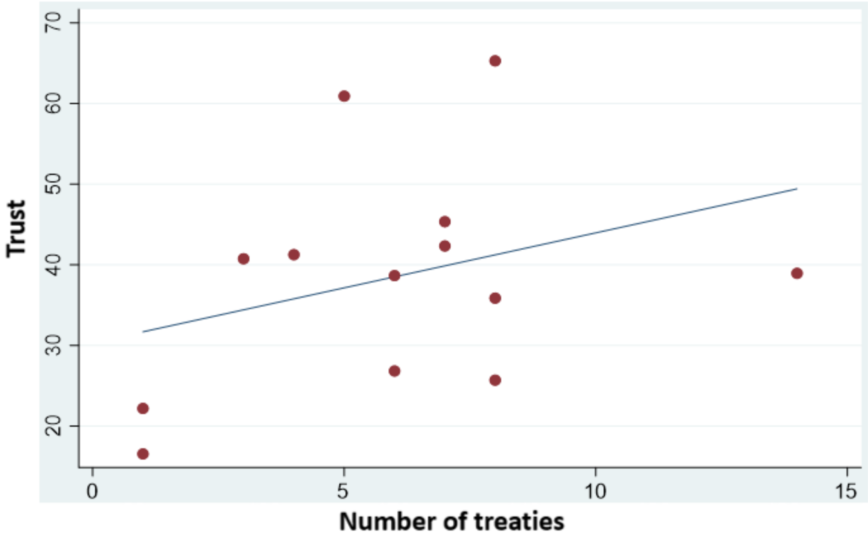

Figure 13. Relation between trust and the number of treaties of 13 countries that are not members of the council of Europe for the year 2017

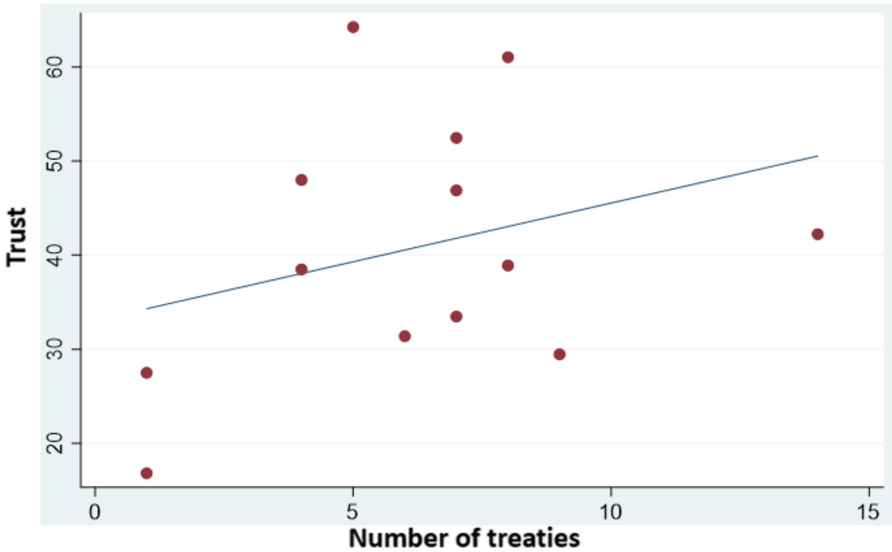

Figure 14. Relation between trust and the number of treaties of 13 countries that are not members of the council of Europe for the year 2018

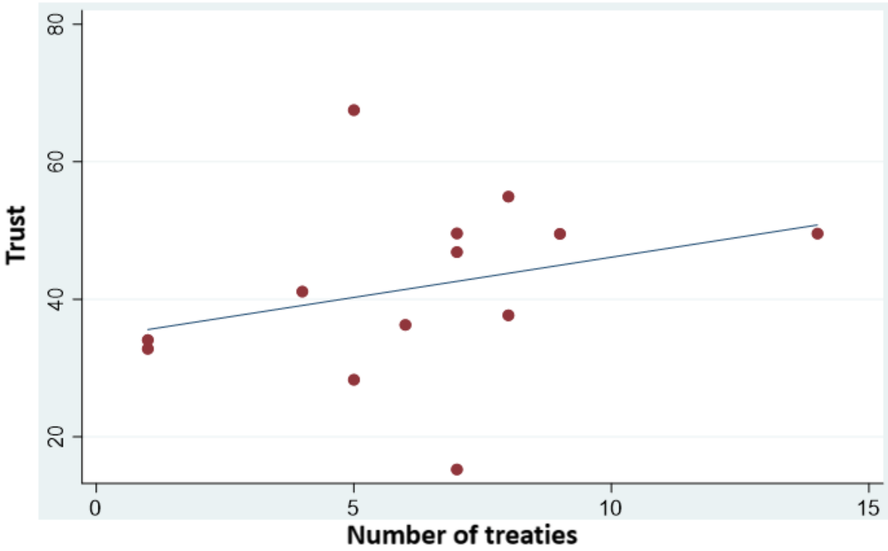

Figure 15. Relation between trust and the number of treaties of 13 countries that are not members of the council of Europe for the year 2019

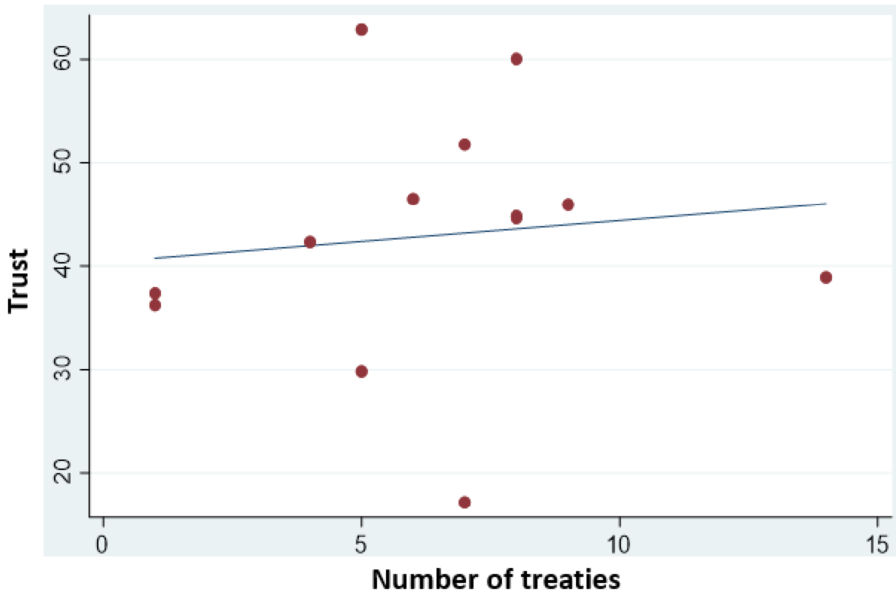

Figure 16. Relation between trust and the number of treaties of 12 countries that are not members of the council of Europe for the year 2020

Table 5

Descriptive statistics of the variables Trust, Number of treaties a country is involved in and GDP per capita for 27 countries that are member of the Council of Europe.

Variable	Observations	Mean	Standard deviation	Minimum	Maximum
Trust	132	46.904	16.791	13.249	84.998
Number of treaties	132	140.25	25.533	99	189
GDP per capita	132	40340.92	24402.08	8536.434	117197.5

Table 6

Descriptive statistics of the variables Trust, Number of treaties a country is involved in and GDP growth for 14 countries that are not member of the Council of Europe.

Variable	Observations	Mean	Standard deviation	Minimum	Maximum
Trust	70	40.841	12.995	15.252	67.520
Number of treaties	70	11.271	18.809	1	80
GDP per capita	70	27365.05	19143.68	5334.556	65279.53

Table 7

Regression of the number of treaties a county is involved in on the percentage of citizens from that country that trust their national government for 2016-2019 for 41 countries.

Variable	(1)	(2)	(3)
Number of treaties	0.061*** (0.018)	0.062 (0.046)	0.061 (0.0474)
Member Council		-7.898 (5.713)	-7.643 (5.877)
GDP per capita		0.0004***	0.0004***

		(0.000)	(0.000)
Year fixed effects	no	no	yes
Constant	37.935*** (1.867)	28.626*** (1.901)	26.900*** (2.488)
Observations	162	162	162
R-squared	0.068	0.426	0.431

***p<0.01 **p<0.05 *p<0.10.

Table 8

Regressions of the number of treaties a county is involved in on the percentage of citizens from that country that trust their national government for 2016-2020 including country fixed effects for 41 countries.

Variable	(1)	(2)	(3)	(4)
Number of treaties	0.065*** (0.016)	0.074* (0.040)	0.070* (0.041)	-0.169 (0.421)
Member Council		-8.617* (4.926)	-8.095* (5.101)	25.152 (62.105)
GDP per capita		0.0004*** (0.0000)	0.0004*** (0.0000)	-0.0002 (0.0002)
Year fixed effects	no	no	yes	yes
Country fixed effects	no	no	no	yes
Constant	38.595*** (1.642)	29.079*** (1.702)	26.137*** (2.398)	82.824*** (11.108)
Observations	202	202	202	202
R-squared	0.073	0.411	0.437	0.867

***p<0.01 **p<0.05 *p<0.10.

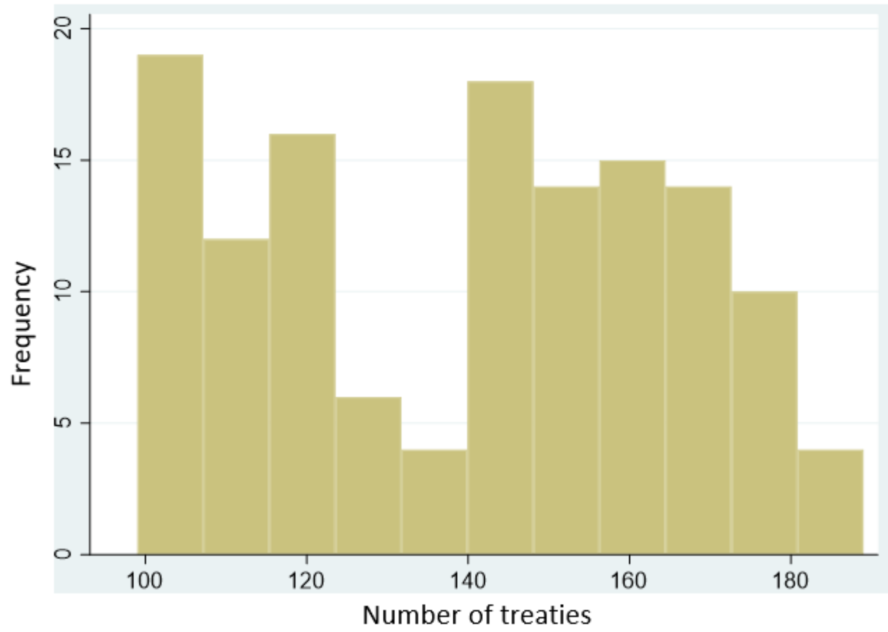

Figure 17. Histogram of the number of treaties a country is involved in for 27 countries that are members of the Council of Europe

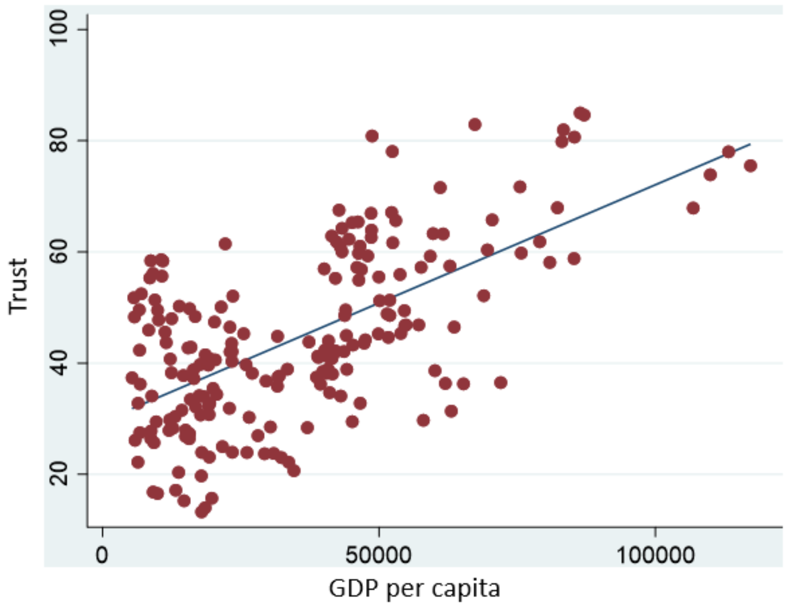

Figure 18. Relation between trust and GDP per capita for 41 countries over the years 2016-2020.

Appendix B: the model

$$Max_{x_1}^{U_1}: \alpha_1 x_1 + \alpha_2 x_2 + 2\delta - \frac{1}{2}x_1^2 \tag{3}$$

$$\alpha_1 - x_1^* = 0$$

$$x_1^* = \alpha_1$$

$$Max_{x_2}^{U_2}: \alpha_1 x_1 + \alpha_2 x_2 + 2\delta - \frac{1}{2}x_2^2$$

$$\alpha_2 - x_2^* = 0$$

$$x_2^* = \alpha_2$$

$$\frac{dU_1}{dx_2} = \alpha_1$$

$$\frac{dU_2}{dx_1} = \alpha_2$$

$$Max_{x_1}^{U_t}: 2\alpha_1 x_1 + 2\alpha_2 x_2 + 2\delta - \frac{1}{2}x_1^2 - \frac{1}{2}x_2^2 \tag{4}$$

$$2\alpha_1 - x_1^s = 0$$

$$x_1^s = 2\alpha_1$$

$$Max_{x_2}^{U_t}: 2\alpha_1 x_1 + 2\alpha_2 x_2 + 2\delta - \frac{1}{2}x_1^2 - \frac{1}{2}x_2^2$$

$$2\alpha_2 - x_2^s = 0$$

$$x_2^s = 2\alpha_2$$

$$U_1^*(x_1^* = \alpha_1, x_2^* = \alpha_2) = \alpha_1^2 + \alpha_2^2 - \frac{1}{2}\alpha_1^2 = \alpha_2^2 + \frac{1}{2}\alpha_1^2$$

$$U_2^*(x_1^* = \alpha_1, x_2^* = \alpha_2) = \alpha_1^2 + \alpha_2^2 - \frac{1}{2}\alpha_2^2 = \alpha_1^2 + \frac{1}{2}\alpha_2^2$$

$$U_1^* + U_2^* = \frac{3}{2}\alpha_1^2 + \frac{3}{2}\alpha_2^2$$

$$U_1^s(x_1^s = 2\alpha_1, x_2^s = 2\alpha_2^s) = 2\alpha_1^2 + 2\alpha_2^2 - 2\alpha_1^2 = 2\alpha_2^2$$

$$U_2^s(x_1^s = 2\alpha_1, x_2^s = 2\alpha_2^s) = 2\alpha_1^2 + 2\alpha_2^2 - 2\alpha_2^2 = 2\alpha_1^2$$

$$U_1^s + U_2^s = 2\alpha_1^2 + 2\alpha_2^2$$

So: $U_1^s + U_2^s > U_1^* + U_2^*$

$$U_1(x_1 = 2\alpha_1, x_2 = \alpha_2) = 2\alpha_1^2 + \alpha_2^2 - 2\alpha_1^2 = \alpha_2^2$$

$$U_2(x_1 = 2\alpha_1, x_2 = \alpha_2) = 2\alpha_1^2 + \alpha_2^2 - \frac{1}{2}\alpha_2^2 = 2\alpha_1^2 + \frac{1}{2}\alpha_2^2$$

$$U_1(x_1 = \alpha_1, x_2 = 2\alpha_2) = \alpha_1^2 + 2\alpha_2^2 - \frac{1}{2}\alpha_1^2 = 2\alpha_2^2 + \frac{1}{2}\alpha_1^2$$

$$U_2(x_1 = \alpha_1, x_2 = 2\alpha_2) = \alpha_1^2 + 2\alpha_2^2 - 2\alpha_2^2 = \alpha_1^2$$

$$Max_{\hat{x}_1}^{U_{1+2}^{x-type}} : \frac{1}{2}(2\alpha_l\hat{x}_1 + 2\alpha_l\hat{x}_2) + \frac{1}{2}(2\alpha_h\hat{x}_1 + 2\alpha_h\hat{x}_2) - \frac{1}{2}(\hat{x}_1)^2 - \frac{1}{2}(\hat{x}_2)^2 \quad (9)$$

$$\alpha_l - \frac{1}{2}\hat{x}_1^* + \alpha_h - \frac{1}{2}\hat{x}_1^* = 0$$

$$\hat{x}_1^* = \alpha_l + \alpha_h$$

$$Max_{\hat{x}_2}^{U_{1+2}^{x-type}} : \frac{1}{2}(2\alpha_l\hat{x}_1 + 2\alpha_l\hat{x}_2) + \frac{1}{2}(2\alpha_h\hat{x}_1 + 2\alpha_h\hat{x}_2) - \frac{1}{2}(\hat{x}_1)^2 - \frac{1}{2}(\hat{x}_2)^2$$

$$\alpha_l - \frac{1}{2}\hat{x}_2^* + \alpha_h - \frac{1}{2}\hat{x}_2^* = 0$$

$$\hat{x}_2^* = \alpha_l + \alpha_h$$

$$Max_{\hat{y}_1}^{U_{1+2}^{y-type}} : \frac{1}{2}\left(2\alpha_l\frac{\hat{y}_1}{\alpha_l} + 2\alpha_l\frac{\hat{y}_2}{\alpha_l} - \frac{1}{2}\left(\frac{\hat{y}_1}{\alpha_l}\right)^2 - \frac{1}{2}\left(\frac{\hat{y}_2}{\alpha_l}\right)^2\right) + \frac{1}{2}\left(2\alpha_h\frac{\hat{y}_1}{\alpha_h} + 2\alpha_h\frac{\hat{y}_2}{\alpha_h} - \frac{1}{2}\left(\frac{\hat{y}_1}{\alpha_h}\right)^2 - \frac{1}{2}\left(\frac{\hat{y}_2}{\alpha_h}\right)^2\right) \quad (10)$$

$$\frac{1}{2}\left(2 - \frac{\hat{y}_1^*}{\alpha_l^2}\right) + \frac{1}{2}\left(2 - \frac{\hat{y}_1^*}{\alpha_h^2}\right) = 0$$

$$\frac{1}{2}\frac{\hat{y}_1^*}{\alpha_l^2} + \frac{1}{2}\frac{\hat{y}_1^*}{\alpha_h^2} = 2$$

$$\hat{y}_1^*\left(\frac{1}{\alpha_h^2} + \frac{1}{\alpha_l^2}\right) = 4$$

$$\hat{y}_1^* = \frac{4}{\frac{1}{\alpha_h^2} + \frac{1}{\alpha_l^2}} = \frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2 + \alpha_l^2}$$

$$Max_{\hat{y}_2}^{U_{1+2}^{y-type}} : \frac{1}{2}\left(2\alpha_l\frac{\hat{y}_1}{\alpha_l} + 2\alpha_l\frac{\hat{y}_2}{\alpha_l} - \frac{1}{2}\left(\frac{\hat{y}_1}{\alpha_l}\right)^2 - \frac{1}{2}\left(\frac{\hat{y}_2}{\alpha_l}\right)^2\right) + \frac{1}{2}\left(2\alpha_h\frac{\hat{y}_1}{\alpha_h} + 2\alpha_h\frac{\hat{y}_2}{\alpha_h} - \frac{1}{2}\left(\frac{\hat{y}_1}{\alpha_h}\right)^2 - \frac{1}{2}\left(\frac{\hat{y}_2}{\alpha_h}\right)^2\right)$$

$$\frac{1}{2}\left(2 - \frac{\hat{y}_2^*}{\alpha_l^2}\right) + \frac{1}{2}\left(2 - \frac{\hat{y}_2^*}{\alpha_h^2}\right) = 0$$

$$\frac{1}{2}\frac{\hat{y}_2^*}{\alpha_l^2} + \frac{1}{2}\frac{\hat{y}_2^*}{\alpha_h^2} = 2$$

$$\hat{y}_2^*\left(\frac{1}{\alpha_h^2} + \frac{1}{\alpha_l^2}\right) = 4$$

$$\hat{y}_2^* = \frac{4}{\frac{1}{\alpha_h^2} + \frac{1}{\alpha_l^2}} = \frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2 + \alpha_l^2}$$

$$U_1^{x-type}(\hat{x}_1^* = \alpha_l + \alpha_h, \hat{x}_2^* = \alpha_l + \alpha_h) = \frac{1}{2}\big(\alpha_l(\alpha_l + \alpha_h) + \alpha_l(\alpha_l + \alpha_h)\big) + \frac{1}{2}\big(\alpha_h(\alpha_l + \alpha_{h)} + \alpha_h(\alpha_l + \alpha_h)\big) - \frac{1}{2}(\alpha_l + \alpha_h)^2 \quad (11)$$

$$= \alpha_l^2 + \alpha_h^2 + 2\alpha_l\alpha_h - \frac{1}{2}(\alpha_l + \alpha_h)^2 = \frac{1}{2}(\alpha_l + \alpha_h)^2$$

$$U_2^{x-type}(\hat{x}_1^* = \alpha_l + \alpha_h, \hat{x}_2^* = \alpha_l + \alpha_h) = \frac{1}{2}\big(\alpha_l(\alpha_l + \alpha_h) + \alpha_l(\alpha_l + \alpha_h)\big) + \frac{1}{2}\big(\alpha_h(\alpha_l + \alpha_{h)} + \alpha_h(\alpha_l + \alpha_h)\big) - \frac{1}{2}(\alpha_l + \alpha_h)^2$$

$$= \alpha_l^2 + \alpha_h^2 + 2\alpha_l\alpha_h - \frac{1}{2}(\alpha_l + \alpha_h)^2 = \frac{1}{2}(\alpha_l + \alpha_h)^2$$

$$U_{1+2}^{x-type}(\hat{x}_1^* = \alpha_l + \alpha_h, \hat{x}_2^* = \alpha_l + \alpha_h) = \frac{1}{2}(\alpha_l + \alpha_h)^2 + \frac{1}{2}(\alpha_l + \alpha_h)^2 = (\alpha_l + \alpha_h)^2$$

$$U_1^{y-type}\left(\hat{y}_1^* = \frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}, \hat{y}_2^* = \frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}\right) = \frac{1}{2}\left(\alpha_l\frac{\frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}}{\alpha_l} + \alpha_l\frac{\frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}}{\alpha_l} - \frac{1}{2}\left(\frac{\frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}}{\alpha_l}\right)^2\right) + \frac{1}{2}\left(\alpha_h\frac{\frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}}{\alpha_h} + \alpha_h\frac{\frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}}{\alpha_h} - \frac{1}{2}\left(\frac{\frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}}{\alpha_h}\right)^2\right) \quad (12)$$

$$= \frac{1}{2}\left(\frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2} + \frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2} - \frac{1}{2}\left(\frac{4\alpha_h^2\alpha_l}{\alpha_h^2+\alpha_l^2}\right)^2\right) + \frac{1}{2}\left(\frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2} + \frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2} - \frac{1}{2}\left(\frac{4\alpha_h\alpha_l^2}{\alpha_h^2+\alpha_l^2}\right)^2\right)$$

$$= \frac{8\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2} - \frac{1}{2}\left(\frac{1}{2}\left(\frac{4\alpha_h^2\alpha_l}{\alpha_h^2+\alpha_l^2}\right)^2 + \frac{1}{2}\left(\frac{4\alpha_h\alpha_l^2}{\alpha_h^2+\alpha_l^2}\right)^2\right) = \frac{8\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2} - \frac{1}{4}\left(\frac{16\alpha_h^4\alpha_l^2}{(\alpha_h^2+\alpha_l^2)^2} + \frac{16\alpha_h^2\alpha_l^4}{(\alpha_h^2+\alpha_l^2)^2}\right)$$

$$= \frac{8\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2} - \frac{4\alpha_h^4\alpha_l^2}{(\alpha_h^2+\alpha_l^2)^2} + \frac{4\alpha_h^2\alpha_l^4}{(\alpha_h^2+\alpha_l^2)^2} = \frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}\left(2 - \frac{\alpha_l^2}{\alpha_h^2+\alpha_l^2} - \frac{\alpha_h^2}{\alpha_h^2+\alpha_l^2}\right) = \frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}(2-1) = \frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}$$

$$U_2^{y-type}\left(\hat{y}_1^* = \frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}, \hat{y}_2^* = \frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}\right) = \frac{1}{2}\left(\alpha_l\frac{\frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}}{\alpha_l} + \alpha_l\frac{\frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}}{\alpha_l} - \frac{1}{2}\left(\frac{\frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}}{\alpha_l}\right)^2\right) + \frac{1}{2}\left(\alpha_h\frac{\frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}}{\alpha_h} + \alpha_h\frac{\frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}}{\alpha_h} - \frac{1}{2}\left(\frac{\frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}}{\alpha_h}\right)^2\right) \quad (12)$$

$$= \frac{1}{2}\left(\frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2} + \frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2} - \frac{1}{2}\left(\frac{4\alpha_h^2\alpha_l}{\alpha_h^2+\alpha_l^2}\right)^2\right) + \frac{1}{2}\left(\frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2} + \frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2} - \frac{1}{2}\left(\frac{4\alpha_h\alpha_l^2}{\alpha_h^2+\alpha_l^2}\right)^2\right)$$

$$= \frac{8\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2} - \frac{1}{2}\left(\frac{1}{2}\left(\frac{4\alpha_h^2\alpha_l}{\alpha_h^2+\alpha_l^2}\right)^2 + \frac{1}{2}\left(\frac{4\alpha_h\alpha_l^2}{\alpha_h^2+\alpha_l^2}\right)^2\right) = \frac{8\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2} - \frac{1}{4}\left(\frac{16\alpha_h^4\alpha_l^2}{\left(\alpha_h^2+\alpha_l^2\right)^2} + \frac{16\alpha_h^2\alpha_l^4}{\left(\alpha_h^2+\alpha_l^2\right)^2}\right)$$

$$= \frac{8\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2} - \frac{4\alpha_h^4\alpha_l^2}{\left(\alpha_h^2+\alpha_l^2\right)^2} + \frac{4\alpha_h^2\alpha_l^4}{(\alpha_h^2+\alpha_l^2)^2} = \frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}\left(2 - \frac{\alpha_l^2}{\alpha_h^2+\alpha_l^2} - \frac{\alpha_h^2}{\alpha_h^2+\alpha_l^2}\right) = \frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}(2-1) = \frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}$$

$$U_{1+2}^{y-type}\left(\hat{y}_1^* = \frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}, \hat{y}_2^* = \frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}\right) = \frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2} + \frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2} = \frac{8\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}$$

The analysis under uncertainty if both $\alpha_1 \neq \alpha_2$ and $\alpha_1 = \alpha_2$ are possible:

$$Max_1^{U_{1+2}^{x-type}}: \frac{1}{4}(2\alpha_l\hat{x}_1 + 2\alpha_l\hat{x}_2) + \frac{1}{4}(2\alpha_h\hat{x}_1 + 2\alpha_h\hat{x}_2) - \frac{1}{4}(2\alpha_h\hat{x}_1 + 2\alpha_l\hat{x}_2) - \frac{1}{4}(2\alpha_l\hat{x}_1 + 2\alpha_h\hat{x}_2) - \frac{1}{2}(\hat{x}_1)^2 - \frac{1}{2}(\hat{x}_2)^2$$

$$\frac{1}{2}\alpha_l + \frac{1}{2}\alpha_l - \frac{1}{2}\hat{x}_1^* + \frac{1}{2}\alpha_h + \frac{1}{2}\alpha_h - \frac{1}{2}\hat{x}_1^* = 0$$

$$\hat{x}_1^* = \alpha_l + \alpha_h$$

$$Max_2^{U_{1+2}^{x-type}}: \frac{1}{4}(2\alpha_l\hat{x}_1 + 2\alpha_l\hat{x}_2) + \frac{1}{4}(2\alpha_h\hat{x}_1 + 2\alpha_h\hat{x}_2) - \frac{1}{4}(2\alpha_h\hat{x}_1 + 2\alpha_l\hat{x}_2) - \frac{1}{4}(2\alpha_l\hat{x}_1 + 2\alpha_h\hat{x}_2) - \frac{1}{2}(\hat{x}_1)^2 - \frac{1}{2}(\hat{x}_2)^2$$

$$\frac{1}{2}\alpha_l + \frac{1}{2}\alpha_l - \frac{1}{2}\hat{x}_2^* + \frac{1}{2}\alpha_h + \frac{1}{2}\alpha_h - \frac{1}{2}\hat{x}_2^* = 0$$

$$\hat{x}_2^* = \alpha_l + \alpha_h$$

$$U_{1+2}^{x-type}(\hat{x}_1^*, \hat{x}_2^*) = \frac{1}{4}(2\alpha_l(\alpha_l+\alpha_h) + 2\alpha_l(\alpha_l+\alpha_h)) + \frac{1}{4}(2\alpha_h(\alpha_l+\alpha_h) + 2\alpha_h(\alpha_l+\alpha_h)) - \frac{1}{4}\left(2\alpha_h(\alpha_l+\alpha_h) + 2\alpha_l(\alpha_l+\alpha_h)\right) - \frac{1}{4}\left(2\alpha_l(\alpha_l+\alpha_h) + 2\alpha_h(\alpha_l+\alpha_h)\right) - \frac{1}{2}(\alpha_l+\alpha_h)^2 - \frac{1}{2}(\alpha_l+\alpha_h)^2 = (\alpha_l+\alpha_h)^2$$

$$Max_{\hat{y}_1}^{U_{1+2}^{y-type}}: \frac{1}{4}\left(2\alpha_l\frac{\hat{y}_1}{\alpha_l} + 2\alpha_l\frac{\hat{y}_2}{\alpha_l} - \frac{1}{2}\left(\frac{\hat{y}_1}{\alpha_l}\right)^2 - \frac{1}{2}\left(\frac{\hat{y}_2}{\alpha_l}\right)^2\right) + \frac{1}{4}\left(2\alpha_h\frac{\hat{y}_1}{\alpha_h} + 2\alpha_h\frac{\hat{y}_2}{\alpha_h} - \frac{1}{2}\left(\frac{\hat{y}_1}{\alpha_h}\right)^2 - \frac{1}{2}\left(\frac{\hat{y}_2}{\alpha_h}\right)^2\right) + \frac{1}{4}\left(2\alpha_l\frac{\hat{y}_1}{\alpha_l} + 2\alpha_h\frac{\hat{y}_2}{\alpha_h} - \frac{1}{2}\left(\frac{\hat{y}_1}{\alpha_l}\right)^2 - \frac{1}{2}\left(\frac{\hat{y}_2}{\alpha_h}\right)^2\right) + \frac{1}{4}\left(2\alpha_h\frac{\hat{y}_1}{\alpha_h} + 2\alpha_l\frac{\hat{y}_2}{\alpha_l} - \frac{1}{2}\left(\frac{\hat{y}_1}{\alpha_h}\right)^2 - \frac{1}{2}\left(\frac{\hat{y}_2}{\alpha_l}\right)^2\right)$$

$$\frac{1}{4}\left(2 - \frac{\hat{y}_1^*}{\alpha_l^2}\right) + \frac{1}{4}\left(2 - \frac{\hat{y}_1^*}{\alpha_h^2}\right) + \frac{1}{4}\left(2 - \frac{\hat{y}_1^*}{\alpha_l^2}\right) + \frac{1}{4}\left(2 - \frac{\hat{y}_1^*}{\alpha_h^2}\right) = 0$$

$\hat{y}_1^* = \frac{4}{\frac{1}{\alpha_l^2}+\frac{1}{\alpha_h^2}} = \frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}$

$$Max_{\hat{y}_2}^{U_{1+2}^{y-type}}: \frac{1}{4}\left(2\alpha_l\frac{\hat{y}_1}{\alpha_l} + 2\alpha_l\frac{\hat{y}_2}{\alpha_l} - \frac{1}{2}\left(\frac{\hat{y}_1}{\alpha_l}\right)^2 - \frac{1}{2}\left(\frac{\hat{y}_2}{\alpha_l}\right)^2\right) + \frac{1}{4}\left(2\alpha_h\frac{\hat{y}_1}{\alpha_h} + 2\alpha_h\frac{\hat{y}_2}{\alpha_h} - \frac{1}{2}\left(\frac{\hat{y}_1}{\alpha_h}\right)^2 - \frac{1}{2}\left(\frac{\hat{y}_2}{\alpha_h}\right)^2\right) + \frac{1}{4}\left(2\alpha_l\frac{\hat{y}_1}{\alpha_l} + 2\alpha_h\frac{\hat{y}_2}{\alpha_h} - \frac{1}{2}\left(\frac{\hat{y}_1}{\alpha_l}\right)^2 - \frac{1}{2}\left(\frac{\hat{y}_2}{\alpha_h}\right)^2\right) + \frac{1}{4}\left(2\alpha_h\frac{\hat{y}_1}{\alpha_h} + 2\alpha_l\frac{\hat{y}_2}{\alpha_l} - \frac{1}{2}\left(\frac{\hat{y}_1}{\alpha_h}\right)^2 - \frac{1}{2}\left(\frac{\hat{y}_2}{\alpha_l}\right)^2\right)$$

$$\frac{1}{4}\left(2 - \frac{\hat{y}_2^*}{\alpha_l^2}\right) + \frac{1}{4}\left(2 - \frac{\hat{y}_2^*}{\alpha_h^2}\right) + \frac{1}{4}\left(2 - \frac{\hat{y}_2^*}{\alpha_l^2}\right) + \frac{1}{4}\left(2 - \frac{\hat{y}_2^*}{\alpha_h^2}\right) = 0$$

$\hat{y}_2^* = \frac{4}{\frac{1}{\alpha_l^2}+\frac{1}{\alpha_h^2}} = \frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}$

$$U_{1+2}^{y-type}(\hat{y}_1^*,\ \hat{y}_2^*) = \frac{1}{4}\left(2\frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2} + 2\frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2} - \frac{1}{2}\left(\frac{4\alpha_h^2\alpha_l}{\alpha_h^2+\alpha_l^2}\right)^2 - \frac{1}{2}\left(\frac{4\alpha_h^2\alpha_l}{\alpha_h^2+\alpha_l^2}\right)^2\right) + \frac{1}{4}\left(2\frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2} + 2\frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2} - \frac{1}{2}\left(\frac{4\alpha_h\alpha_l^2}{\alpha_h^2+\alpha_l^2}\right)^2 - \frac{1}{2}\left(\frac{4\alpha_h\alpha_l^2}{\alpha_h^2+\alpha_l^2}\right)^2\right) + \frac{1}{4}\left(2\frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2} + 2\frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2} - \frac{1}{2}\left(\frac{4\alpha_h^2\alpha_l}{\alpha_h^2+\alpha_l^2}\right)^2 - \frac{1}{2}\left(\frac{4\alpha_h\alpha_l^2}{\alpha_h^2+\alpha_l^2}\right)^2\right) + \frac{1}{4}\left(2\frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2} + 2\frac{4\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2} - \frac{1}{2}\left(\frac{4\alpha_h\alpha_l^2}{\alpha_h^2+\alpha_l^2}\right)^2 - \frac{1}{2}\left(\frac{4\alpha_h^2\alpha_l}{\alpha_h^2+\alpha_l^2}\right)^2\right) = \frac{16\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2} - \frac{8\alpha_h^4\alpha_l^2}{(\alpha_h^2+\alpha_l^2)^2} - \frac{8\alpha_h^2\alpha_l^4}{(\alpha_h^2+\alpha_l^2)^2} = \frac{8\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}\left(2 - \frac{\alpha_h^2}{\alpha_h^2+\alpha_l^2} - \frac{\alpha_l^2}{\alpha_h^2+\alpha_l^2}\right) = \frac{8\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}$$

The derivative of total utility for the y-type treaty:

$Max_{\alpha_l}^{U_{1+2}^{y-type}}: \frac{8\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}$

$= \frac{16\alpha_h^2\alpha_l(\alpha_h^2+\alpha_l^2) - 16\alpha_h^2\alpha_l^3}{(\alpha_h^2+\alpha_l^2)^2}$

As $0 < \alpha_l < \alpha_h$, $(\alpha_h^2 + \alpha_l^2)^2 > 0$. So $U_{1+2}^{y-type'}(\alpha_l) > 0$ if $16\alpha_h^2\alpha_l(\alpha_h^2 + \alpha_l^2) - 16\alpha_h^2\alpha_l^3 > 0$:

$16\alpha_h^2\alpha_l(\alpha_h^2 + \alpha_l^2) - 16\alpha_h^2\alpha_l^3 > 0$

$16\alpha_h^4\alpha_l + 16\alpha_h^2\alpha_l^3 > 16\alpha_h^2\alpha_l^3$

$\alpha_h > 0$

Which is the case, such that $U_{1+2}^{y-type'}(\alpha_l) > 0$.

$Max_{\alpha_h}^{U_{1+2}^{y-type}}: \frac{8\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}$

$= \frac{16\alpha_h\alpha_l^2(\alpha_h^2+\alpha_l^2)-16\alpha_h^3\alpha_l^2}{(\alpha_h^2+\alpha_l^2)^2}$

As $0 < \alpha_l < \alpha_h$, $(\alpha_h^2 + \alpha_l^2)^2 > 0$. So $U_{1+2}^{y-type'}(\alpha_h) > 0$ if $16\alpha_h\alpha_l^2(\alpha_h^2 + \alpha_l^2) - 16\alpha_h^3\alpha_l^2 > 0$:

$16\alpha_h\alpha_l^2(\alpha_h^2 + \alpha_l^2) - 16\alpha_h^3\alpha_l^2 > 0$

$16\alpha_h^3\alpha_l^2 + 16\alpha_h\alpha_l^4 > 16\alpha_h^3\alpha_l^2$

$\alpha_l > 0$

Which is the case, such that $U_{1+2}^{y-type'}(\alpha_h) > 0$.

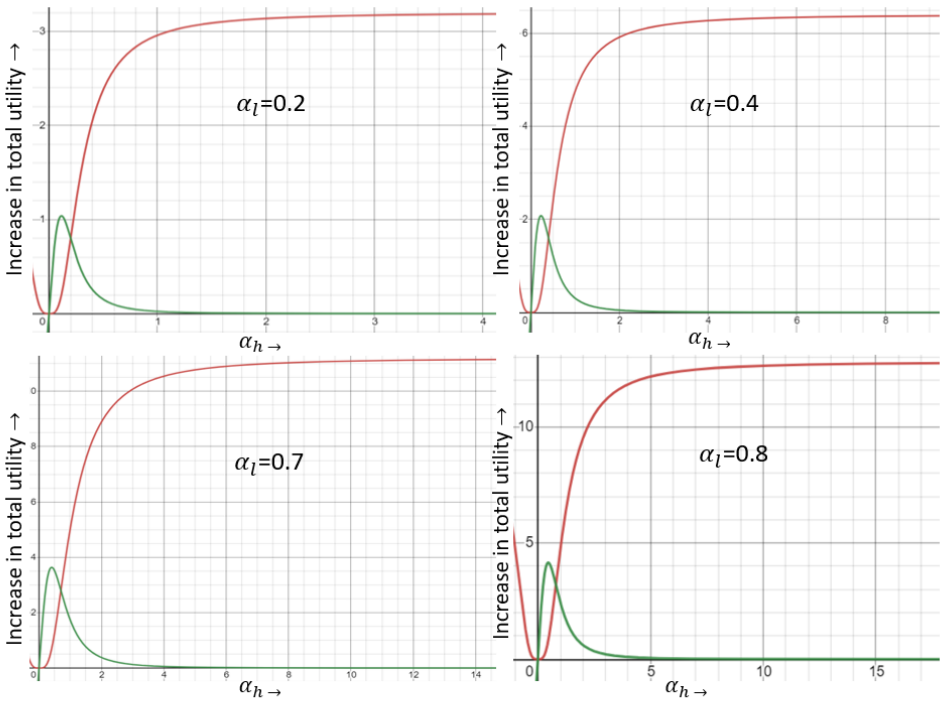

Figure 19. Plots of the derivative of $\frac{8\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}$ with respect to both α_l in red ($\frac{16\alpha_h^2\alpha_l(\alpha_h^2+\alpha_l^2)-16\alpha_h^2\alpha_l^3}{(\alpha_h^2+\alpha_l^2)^2}$) and α_h in green ($\frac{16\alpha_h\alpha_l^2(\alpha_h^2+\alpha_l^2)-16\alpha_h^3\alpha_l^2}{(\alpha_h^2+\alpha_l^2)^2}$) for 4 different values of α_l

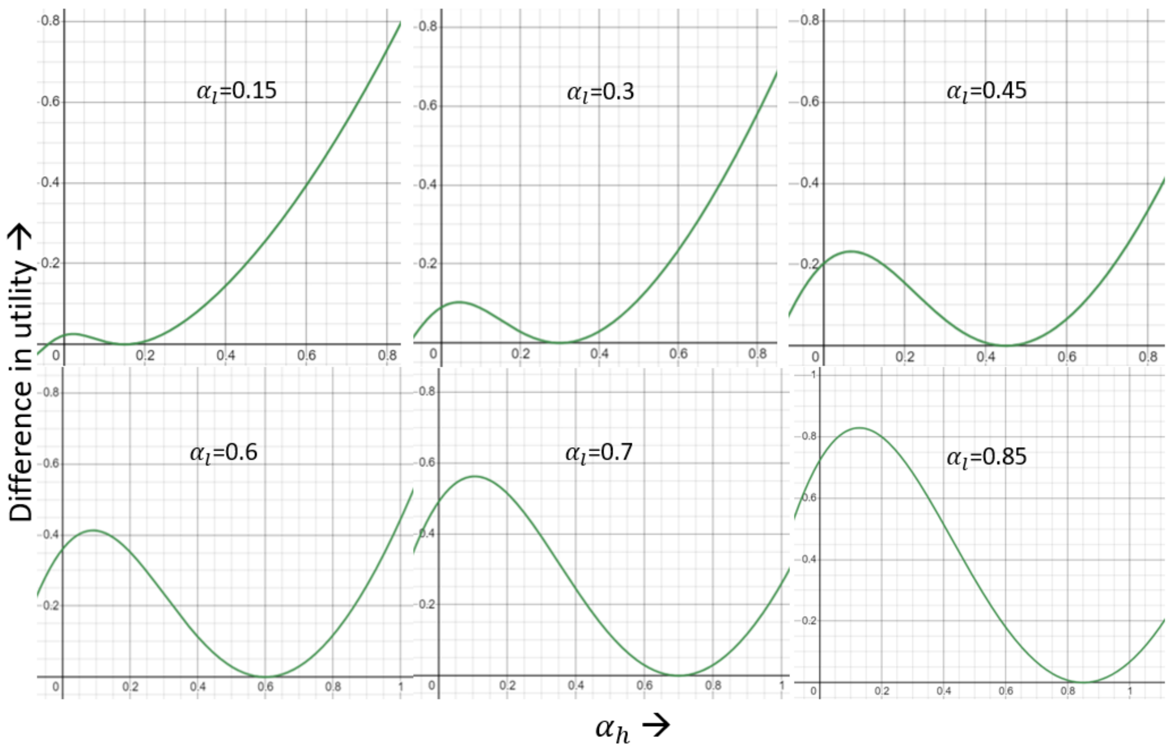

Figure 20. Plots of $(\alpha_h + \alpha_l)^2 - \frac{8\alpha_h^2\alpha_l^2}{\alpha_h^2+\alpha_l^2}$ for different values of α_l

Appendix C: the dataset

Country	*Time*	*Trust*	*Number of treaties*	*Council member*	*European Union*	*GDP per capita*
AUS	2016	45.2731742858886	7	0	0	49881.766
AUS	2017	45.3406944274902	7	0	0	53934.25
AUS	2018	46.8836860656738	7	0	0	57180.781
AUS	2019	46.870002746582	7	0	0	54875.285
AUS	2020	44.6422233581542	8	0	0	51692.844
AUT	2016	43.2638206481933	144	1	1	45276.832
AUT	2017	43.5907936096191	145	1	1	47312.008
AUT	2018	48.8678741455078	147	1	1	51461.434
AUT	2019	51.2338256835937	148	1	1	50114.402
AUT	2020	62.6177825927734	149	1	1	48586.801
BEL	2016	41.9177513122558	169	1	1	41984.102
BEL	2017	44.9731903076171	171	1	1	44089.309
BEL	2018	44.1944541931152	172	1	1	47519.555
BEL	2019	32.7901153564453	174	1	1	46591.492
BEL	2020	29.479959487915	174	1	1	45159.348
BRA	2016	26.4140262603759	1	0	0	8710.0635
BRA	2017	16.5490264892578	1	0	0	9928.6758
BRA	2018	16.8186645507812	1	0	0	9151.3818
BRA	2019	34.0850105285644	1	0	0	8897.5527
BRA	2020	36.2292404174804	1	0	0	6796.8447
CAN	2016	61.8195304870605	8	0	0	42315.605
CAN	2017	65.2735977172851	8	0	0	45129.355
CAN	2018	61.0466918945312	8	0	0	46548.52
CAN	2019	54.9280967712402	8	0	0	46338.34
CAN	2020	60.0424118041992	8	0	0	43294.648
CHE	2016	79.8536682128906	135	1	0	83073.281
CHE	2017	81.9706726074218	137	1	0	83352.086
CHE	2018	84.997947692871	138	1	0	86388.406
CHE	2019	80.6612701416015	138	1	0	85334.516

CHE	2020	84.633071899414	140	1	0	87097.039
CHL	2016	20.3538856506347	6	0	0	13753.592
CHL	2017	26.8283309936523	6	0	0	14998.817
CHL	2018	33.4744186401367	7	0	0	15888.145
CHL	2019	15.252345085144	7	0	0	14741.715
CHL	2020	17.1463794708251	7	0	0	13231.704
COL	2016	26.1251201629638	1	0	0	5870.7778
COL	2017	22.1882591247558	1	0	0	6376.7065
COL	2018	27.4869499206542	1	0	0	6729.5835
COL	2019	32.798110961914	1	0	0	6424.9795
COL	2020	37.3634376525878	1	0	0	5334.5562
CRI	2016	27.9027576446533	3	0	0	12011.223
CRI	2017	40.7448463439941	3	0	0	12225.574
CRI	2018	47.9977798461914	4	0	0	12485.424
CRI	2019	28.3023853302001	5	0	0	12693.828
CRI	2020	29.8230571746826	5	0	0	12140.854
CZE	2016	41.5120697021484	115	1	1	18575.232
CZE	2017	34.3870811462402	119	1	1	20636.199
CZE	2018	42.0783309936523	122	1	1	23419.736
CZE	2019	.	124	1	1	23660.149
CZE	2020	31.8858985900878	125	1	1	22931.275
DEU	2016	55.2613563537597	172	1	1	42107.516
DEU	2017	62.2935638427734	172	1	1	44542.297
DEU	2018	59.2990570068359	172	1	1	47950.18
DEU	2019	56.8460426330566	173	1	1	46794.898
DEU	2020	65.4063110351562	175	1	1	46208.43
DNK	2016	46.76607131958	153	1	1	54664
DNK	2017	57.2353324890136	154	1	1	57610.098
DNK	2018	63.2478446960449	154	1	1	61591.93
DNK	2019	63.2999038696289	155	1	1	59775.734
DNK	2020	71.5797576904296	155	1	1	61063.316
ESP	2016	30.251667022705	141	1	1	26505.344
ESP	2017	26.9585952758789	141	1	1	28100.586

ESP	2018	28.5195617675781	143	1	1	30349.752
ESP	2019	36.7785873413085	146	1	1	29555.316
ESP	2020	38.1767082214355	146	1	1	27063.193
EST	2016	33.9834289550781	99	1	1	18282.924
EST	2017	40.5946235656738	100	1	1	20387.283
EST	2018	42.0202560424804	101	1	1	23052.301
EST	2019	40.3306541442871	103	1	1	23397.119
EST	2020	46.480598449707	104	1	1	23027.027
FIN	2016	48.5727272033691	122	1	1	43784.285
FIN	2017	59.7538566589355	123	1	1	46297.496
FIN	2018	55.5102195739746	125	1	1	49964.5
FIN	2019	63.9188156127929	126	1	1	48628.641
FIN	2020	80.8632888793945	126	1	1	48744.988
FRA	2016	28.3978157043457	170	1	1	37037.375
FRA	2017	37.4793510437011	171	1	1	38685.258
FRA	2018	38.0547447204589	172	1	1	41572.484
FRA	2019	38.1849250793457	175	1	1	40578.645
FRA	2020	41.0406646728515	176	1	1	39030.359
GBR	2016	40.8632049560546	142	1	1	41499.555
GBR	2017	44.0120849609375	142	1	1	40857.754
GBR	2018	42.0859870910644	142	1	1	43646.953
GBR	2019	34.0828857421875	144	1	1	43070.5
GBR	2020	34.6972846984863	146	1	0	41059.168
GRC	2016	13.2486553192138	151	1	1	17911.799
GRC	2017	13.9880905151367	153	1	1	18536.191
GRC	2018	15.7048654556274	157	1	1	19747.342
GRC	2019	39.642463684082	158	1	1	19133.758
GRC	2020	39.7469749450683	159	1	1	17622.541
HUN	2016	30.377233505249	104	1	1	13107.378
HUN	2017	37.7770500183105	105	1	1	14623.696
HUN	2018	38.8044052124023	105	1	1	16427.373
HUN	2019	48.3934173583984	107	1	1	16735.66
HUN	2020	42.8733253479003	109	1	1	15980.741

IRL	2016	57.4739761352539	118	1	1	62818.965
IRL	2017	60.3799629211425	118	1	1	69601.688
IRL	2018	61.8405303955078	119	1	1	79068.977
IRL	2019	58.121597290039	121	1	1	80886.617
IRL	2020	58.814826965332	123	1	1	85267.766
ISL	2016	36.3518295288085	122	1	0	61987.926
ISL	2017	36.5041923522949	122	1	0	72010.148
ISL	2018	.	122	1	0	74469.804
ISL	2019	52.1377067565917	123	1	0	68941.461
ISL	2020	59.2407264709472	124	1	0	59270.18
ISR	2016	43.8133163452148	13	0	0	37330.262
ISR	2017	38.9368171691894	14	0	0	40774.129
ISR	2018	42.2329711914062	14	0	0	42063.453
ISR	2019	49.5666923522949	14	0	0	43951.246
ISR	2020	38.8938522338867	14	0	0	44168.945
ITA	2016	23.7599086761474	171	1	1	30939.715
ITA	2017	23.0196285247802	173	1	1	32326.674
ITA	2018	20.6626205444335	175	1	1	34605.262
ITA	2019	22.192584991455	177	1	1	33641.633
ITA	2020	37.4515762329101	178	1	1	31714.221
JPN	2016	36.2200660705566	4	0	0	39400.738
JPN	2017	41.2489929199218	4	0	0	38891.086
JPN	2018	38.4880409240722	4	0	0	39808.168
JPN	2019	41.1213645935058	4	0	0	40777.609
JPN	2020	42.3379974365234	4	0	0	40193.254
KOR	2016	23.7081584930419	8	0	0	29288.871
KOR	2017	35.8582229614257	8	0	0	31616.844
KOR	2018	38.9084014892578	8	0	0	33422.945
KOR	2019	37.6757583618164	8	0	0	40777.609
KOR	2020	44.8309249877929	8	0	0	40193.254
LTU	2016	27.9638576507568	106	1	1	14998.125
LTU	2017	32.1247253417968	108	1	1	16843.699
LTU	2018	32.3758087158203	109	1	1	19176.813

LTU	2019	40.7248458862304	112	1	1	19575.768
LTU	2020	47.4045333862304	112	1	1	20233.641
LUX	2016	67.8977813720703	182	1	1	106826.73
LUX	2017	73.8922042846679	183	1	1	109921.03
LUX	2018	75.5200881958007	187	1	1	117197.48
LUX	2019	78.0170974731445	189	1	1	113218.71
LUX	2020	.	189	1	1	116014.602
LVA	2016	31.5261287689208	99	1	1	14322.022
LVA	2017	26.4000492095947	100	1	1	15656.348
LVA	2018	19.716230392456	103	1	1	17856.307
LVA	2019	23.940767288208	107	1	1	17926.842
LVA	2020	30.6789054870605	107	1	1	17726.254
MEX	2016	27.7944068908691	8	0	0	8744.5156
MEX	2017	25.6953163146972	8	0	0	9287.8496
MEX	2018	29.4568500518798	9	0	0	9686.9854
MEX	2019	49.5231170654296	9	0	0	9950.4502
MEX	2020	45.9497871398925	9	0	0	8329.2715
NLD	2016	57.2273330688476	163	1	1	46007.852
NLD	2017	66.9553604125976	165	1	1	48554.992
NLD	2018	65.6541061401367	166	1	1	53018.629
NLD	2019	61.6572227478027	168	1	1	52476.273
NLD	2020	78.074592590332	169	1	1	52397.117
NOR	2016	65.7646255493164	159	1	0	70460.563
NOR	2017	71.7159805297851	160	1	0	75496.758
NOR	2018	67.9503021240234	162	1	0	82267.813
NOR	2019	59.7987022399902	164	1	0	75719.75
NOR	2020	82.9234237670898	164	1	0	67329.68
NZL	2016	56.9690132141113	5	0	0	40080.492
NZL	2017	60.9015464782714	5	0	0	42992.895
NZL	2018	64.2461242675781	5	0	0	43306.07
NZL	2019	67.5200805664062	5	0	0	42755.215
NZL	2020	62.8641090393066	5	0	0	41441.465
POL	2016	38.2713203430175	107	1	1	12447.439

POL	2017	50.2480430603027	108	1	1	13864.682
POL	2018	42.7517700195312	109	1	1	15468.482
POL	2019	49.7986030578613	110	1	1	15732.203
POL	2020	27.3116607666015	111	1	1	15720.995
PRT	2016	35.4542427062988	155	1	1	19978.4
PRT	2017	50.1088142395019	157	1	1	21437.348
PRT	2018	52.0630645751953	159	1	1	23551.049
PRT	2019	43.5605010986328	160	1	1	23330.816
PRT	2020	61.466941833496	160	1	1	22176.297
RUS	2016	58.4303817749023	74	0	0	8704.8984
RUS	2017	55.6597213745117	76	0	0	10720.333
RUS	2018	45.5838737487792	78	0	0	11287.355
RUS	2019	43.6963844299316	80	0	0	11497.649
RUS	2020	47.7703666687011	80	0	0	10126.722
SVK	2016	37.2222137451171	104	1	1	16501.084
SVK	2017	34.1680107116699	105	1	1	17494.729
SVK	2018	32.7658615112304	106	1	1	19380.514
SVK	2019	23.0972824096679	108	1	1	19303.545
SVK	2020	30.7444515228271	109	1	1	19266.514
SVN	2016	24.9845104217529	116	1	1	21663.643
SVN	2017	23.9779720306396	117	1	1	23455.945
SVN	2018	23.9274635314941	119	1	1	26104.104
SVN	2019	39.7150726318359	121	1	1	25942.955
SVN	2020	45.2974243164062	124	1	1	25517.33
SWE	2016	48.5791320800781	153	1	1	51965.156
SWE	2017	55.9461975097656	153	1	1	53791.508
SWE	2018	49.4396247863769	155	1	1	54589.059
SWE	2019	51.3281745910644	157	1	1	51939.43
SWE	2020	67.1078643798828	157	1	1	52274.41
TUR	2016	58.3728218078613	142	1	0	10894.604
TUR	2017	58.6161231994628	147	1	0	10589.668
TUR	2018	51.3677062988281	147	1	0	9454.3486
TUR	2019	56.1260910034179	149	1	0	9121.5156

TUR	2020	55.3262176513671	149	1	0	8536.4336
USA	2016	29.7205657958984	6	0	0	58021.402
USA	2017	38.6535034179687	6	0	0	60109.656
USA	2018	31.3816089630126	6	0	0	63064.418
USA	2019	36.2774429321289	6	0	0	65279.527
USA	2020	46.4917106628417	6	0	0	63593.445
ZAF	2016	48.3122291564941	7	0	0	5756.9658
ZAF	2017	42.3274230957031	7	0	0	6690.9399
ZAF	2018	52.4685821533203	7	0	0	7005.0952
ZAF	2019	49.5906333923339	7	0	0	6624.7617
ZAF	2020	51.7606697082519	7	0	0	5655.8677

The first column ‘country’ states which country the data is about. The second column ‘year’ states to what year the data belongs. The third column ‘trust’ is the percentage of people that has confidence in the government of that country in that year. The fourth column ‘number of treaties’ states the number of treaties the country is involved in in the corresponding year. The fifth column ‘council member’ is one if the country is a member of the Council of Europe and the sixth column is one if the country is a member of the European Union. The last column ‘GDP per capita’ denotes GDP per capita in that country in that year in current US dollars.